SERVICE MANUAL

2004

Light Service Support Vehicle
LSSV

Includes: General Information
Military Components

GM Defense

VOLUME 1 OF 1
LSSVSM04

Preface

Caution

Caution: To reduce the chance of personal injury and/or property damage, carefully observe the instructions that follow:

The service manuals of General Motors Corporation are intended for use by professional, qualified technicians. Attempting repairs or service without the appropriate training, tools, and equipment could cause injury to you or others. This could also damage the vehicle, or cause the vehicle to operate improperly.

Proper vehicle service and repair are important to the safety of the service technician and to the safe, reliable operation of all motor vehicles. If you need to replace a part, use the same part number or an equivalent part. Do not use a replacement part of lesser quality.

The service procedures we recommend and describe in this service manual are effective methods of performing service and repair. Some of the procedures require the use of tools that are designed for specific purposes.

Accordingly, any person who intends to use a replacement part, a service procedure, or a tool that is not recommended by General Motors, must first establish that there is no jeopardy to personal safety or to the safe operation of the vehicle.

This manual contains various "Cautions" and "Notices" that you must observe carefully to reduce the risk of personal injury during service or repair. Improper service or repair may damage the vehicle or render the vehicle unsafe. For Cautions and Notices, refer to 2004 C/K Truck Service Manual. These "Cautions" and "Notices" are not exhaustive. General Motors cannot possibly warn of all potentially hazardous consequences of your failure to follow these instructions.

This manual covers service procedures to vehicles that are equipped with a Supplemental Inflatable Restraint (SIR). Refer to the "Cautions" in Cautions and Notices and in Restraints. Refer to SIR component and wiring location views in Restraints before performing a service on or around SIR components or wiring. Failure to follow these "Cautions" could cause air bag deployment, personal injury, or otherwise unneeded SIR repairs.

In order to help avoid accidental air bag deployment and personal injury, whenever you service a vehicle that requires repair of the SIR and another vehicle system, we recommend that you first repair the SIR, then go on to the other system.

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2004 General Motors LSSV Military Trucks Service Manual Supplement

This manual provides information on the diagnosis, the service procedures, the adjustments, and the specifications for the 2004 GM LSSV Base Pickup, Crew Cab, and Utility.

Information on transmission unit repair (overhaul) can be found in the 2004 Transmission/Transaxle/Transfer Case Unit Repair Manual (TURM), available separately. The TURM contains information on automatic and manual transmissions and transaxles including the fluid flow and circuit description information.

Technicians who understand the material in this manual, and in the appropriate Dealer Service Bulletins, better serve the vehicle owners.

When this manual refers to a brand name, a part number, or a specific tool, you may use an equivalent product in place of the recommended item. All information, illustrations and specifications in this manual are based on the latest product information available at the time of publication approval.

General Motors reserves the right to make changes at any time without notice.

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PART NO. LSSVSM04

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General Information

Vehicle Identification

The 2004 LSSV series military pickup and utility models derive from standard commercial vehicles. The pickup is a 2500HD, or “1-ton” based cargo/troop carrier. The utility is a 1500 series Tahoe based military command vehicle.

All vehicles have rugged designs intended for all types of roads or infrequent off-road travel. They can ford water obstacles for three minutes without stalling at depths of 51 cm (20 in) at 8 kph (5 mph). These limits are met without causing permanent damage or requiring immediate maintenance.

Each vehicle is equipped with heavy duty shocks front and rear, 4-wheel anti-lock brakes, a locking differential, on-off road tires, front and rear clevis/tie downs and blackout (B/O) lighting.

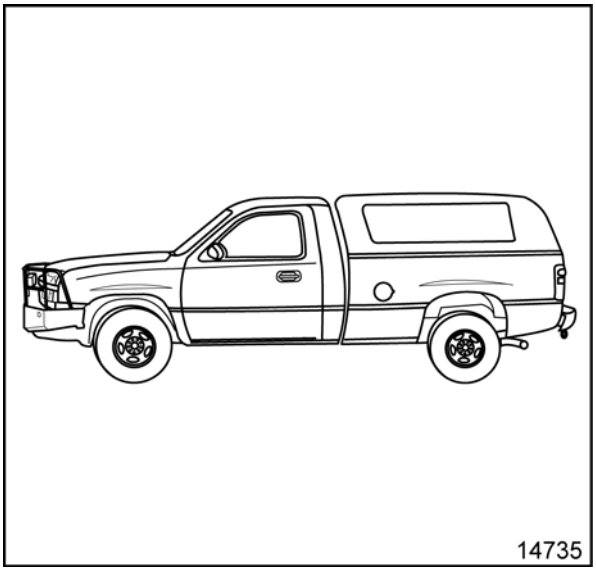
A slave receptacle is mounted on the front of the vehicles, protected by a radiator brush guard.

Pickup Vehicle Information

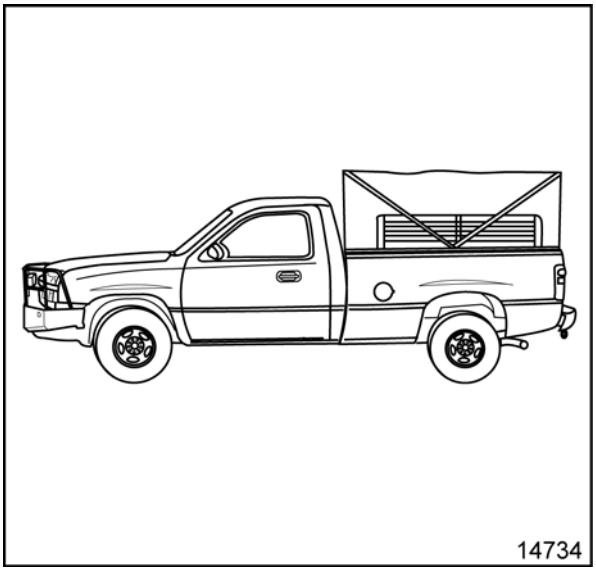
The pickup vehicle is equipped with a 6.6L Turbo diesel engine with a 5-speed Allison automatic transmission and 2-speed transfer case. Payload capacity is not to exceed the gross axle weight rating of the front and rear axle.

The pickup has a cargo cover and troop seating for up to eight or a hard cap with opening windows. A specially upgraded electrical system can handle 24V communications equipment and charging of the 24V battery.

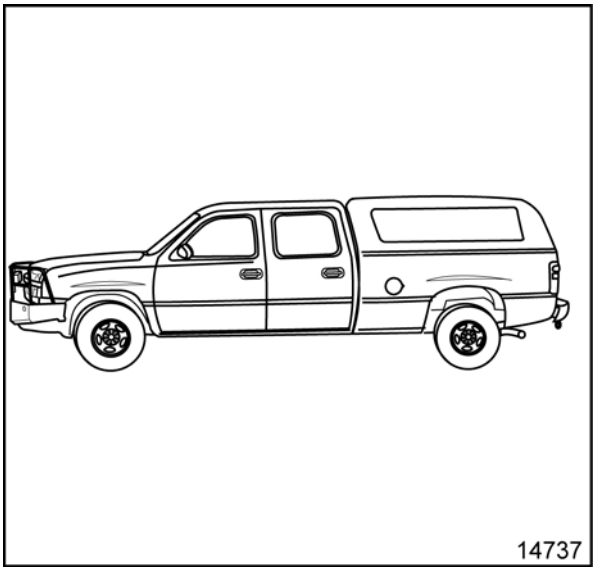
Cargo Carrier Base



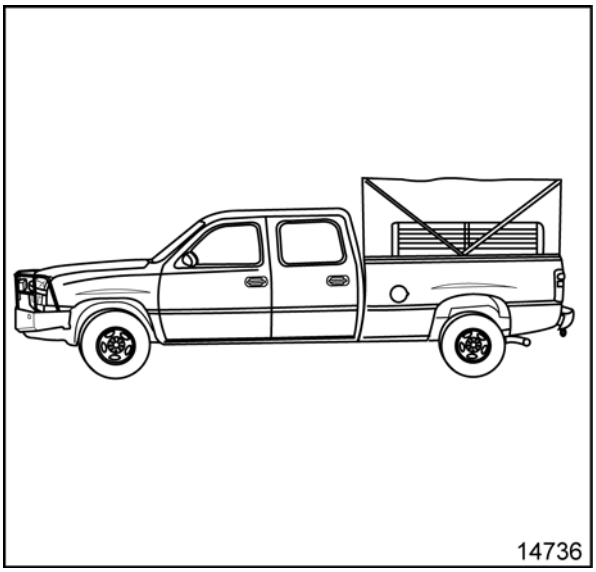
Cargo/Troop Carrier Base



Cargo Carrier Crew Cab



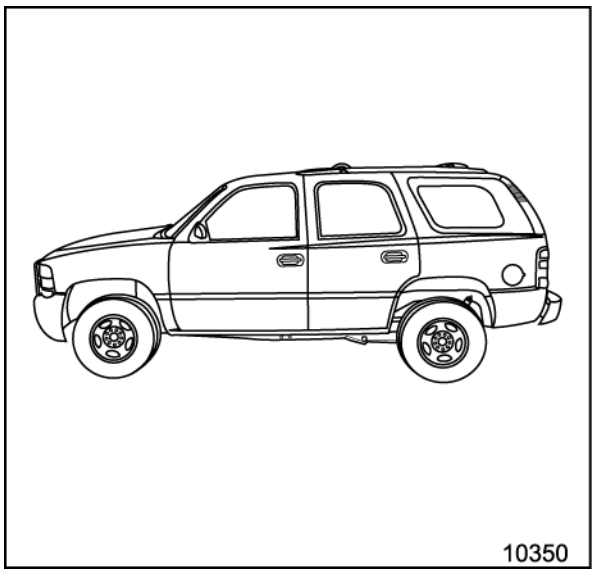
Cargo/Troop Carrier Crew Cab



Utility Vehicle Information

The utility vehicle is equipped with a 5.3L gasoline engine with a 4-speed 4L60E automatic transmission and a 2-speed transfer case. Payload capacity is 1,532 lbs (696 kg), but varies with equipment.

Utility



Military Equipment Options

2004 Light Service Support Vehicle – LSSV Specifications/Options

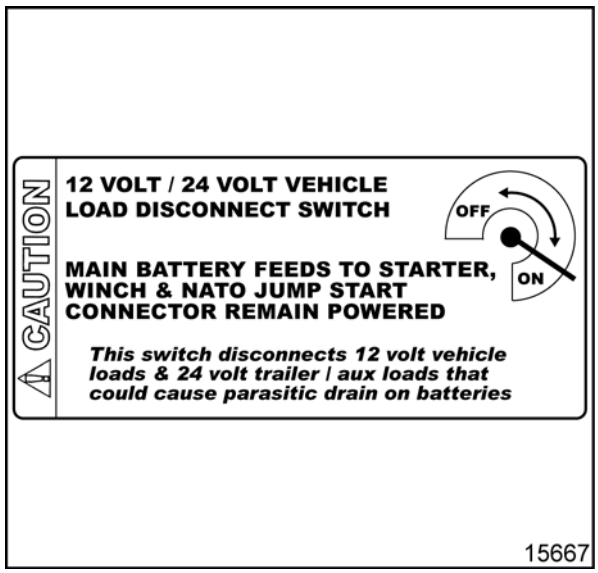
Your vehicle may be equipped with any combination of the following options.

Description
Blackout (B/O) Lighting
Slave Start
Rear Clevis/Tie Downs
Pintle Hook
Trailer Light Connection
Gun Rack
Transfer Case/Differential Vent Filters
Government Data Plate
Cargo Area Troop Seats
Cargo Cover (Soft-Top)
Combination Front or Rear Mounted Winch Prep
Cargo Locking Side/Rear Access Fiberglass Top
Pioneer Tool Kit
Factory Rear Receiver Hitch
Heavy Duty Front Bumper with Brush Guard and Clevis/Tie Downs
Heavy Duty Rear Bumper with Clevis/Tie Downs and Receiver Hitch
Sliding Rear Window
12V/24V Power Converter
Brush Guard

Labels

Your vehicle may have some or all of the following labels.

Vehicle Load Disconnect Switch Caution Label

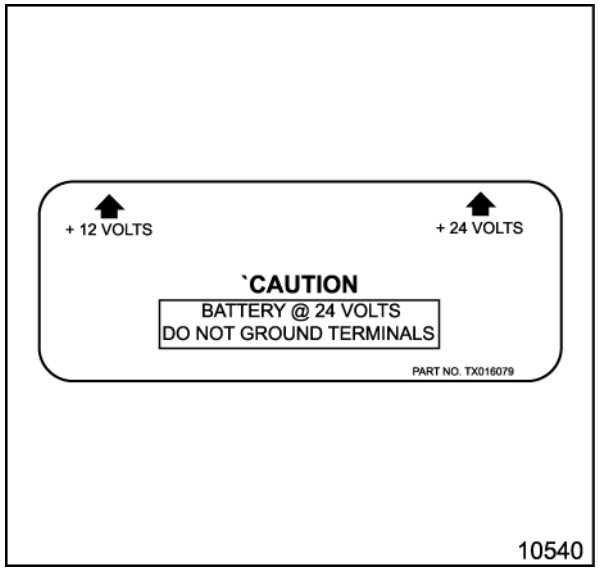

CAUTION
12 VOLT / 24 VOLT VEHICLE
LOAD DISCONNECT SWITCH
OFF
ON
MAIN BATTERY FEEDS TO STARTER,
WINCH & NATO JUMP START
CONNECTOR REMAIN POWERED
This switch disconnects 12 volt vehicle loads & 24 volt trailer / aux loads that could cause parasitic drain on batteries
15667

Notice: The main battery feeds to starter and NATO jump start connector remains powered.

If the vehicle is equipped with a load disconnect switch, the switch disconnects 12-volt vehicle loads and 24-volt trailer/aux loads that could cause a parasitic drain on the batteries.

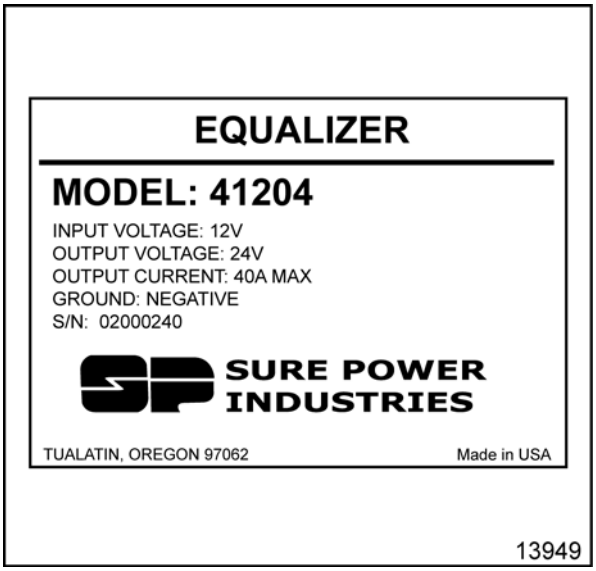
The switch should be placed in the OFF position when the vehicle is parked for an extended period of time. The load disconnect switch is located on the underhood fuse block. The underhood fuse block is located on the driver's side of the vehicle, to the rear of the battery.

24V Battery Caution Label



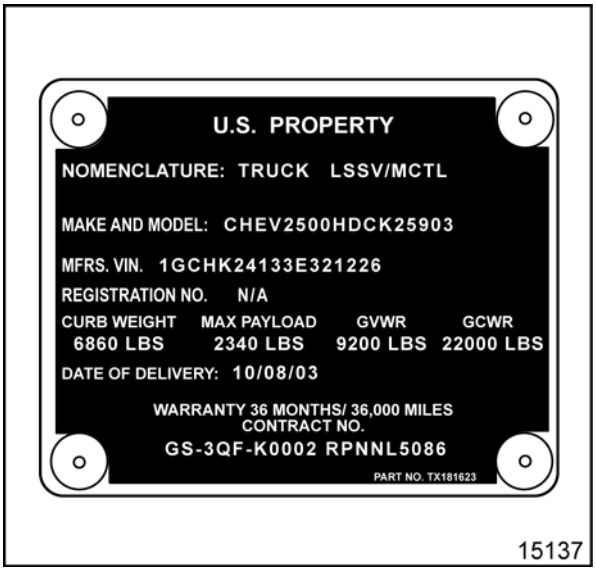
The 24V battery caution label is placed on top of the radiator support near the 24V battery. This battery is on the left side of the engine compartment.

Equalizer Label



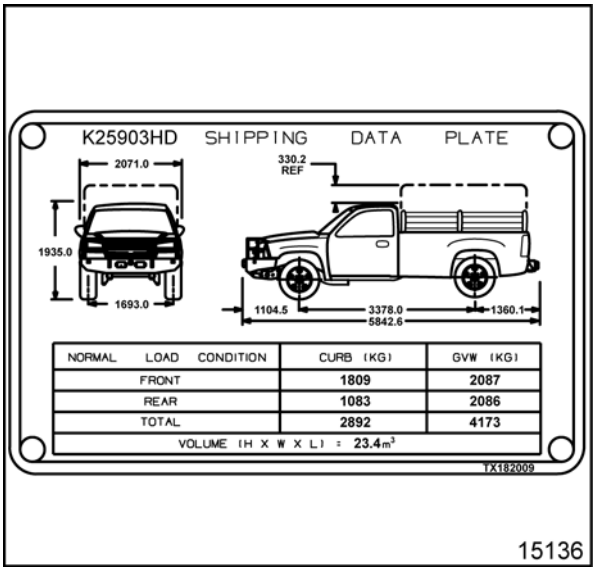
The equalizer label is located on the side of the equalizer. This label includes information on model number, serial number and voltage specifications.

Vehicle Identification Plate



The vehicle identification plate is located on the left front inner door panel under the shipping data plate. This plate includes the identification number, contract number and vehicle variant.

Shipping Data Plate



The shipping data plate is located on the left front inner door panel above the vehicle identification plate. This plate includes the loading and dimensions.

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Maintenance and Lubrication

Maintenance

Owner Checks and Services

If the engine, controls, instruments or gages do not operate as described in this supplement manual, refer to one of the following manuals:

- 2004 C/K Truck Owner's Manual
- 2004 C/K Truck Service Manual
- 2004 Diesel Engine Owner's Manual Supplement
- 2004 LSSV Owner's Manual Supplement

If the concern still has not been corrected, shut down the engine and notify your military maintenance unit.

Periodic Maintenance Inspection

- Inspect the condition of the headlamps, taillamps, turn signals, side lamps, and blackout (B/O) lamps before beginning to operate the vehicle each time.
- Inspect the axle vent tube filter for blockages every six months and more often when difficult off-road conditions are encountered. Replace as needed.
  Refer to the Front Axle Vent Tube Filter Replacement in Front Drive Axle or Rear Axle Vent Tube Filter Replacement in Rear Drive Axle.
- Inspect the transfer case vent tube filter for blockages every six months and more often when difficult off-road conditions are encountered. Replace as needed.
  Refer to Transfer Case Vent Tube Filter Replacement Procedure in Driveline/Axle.

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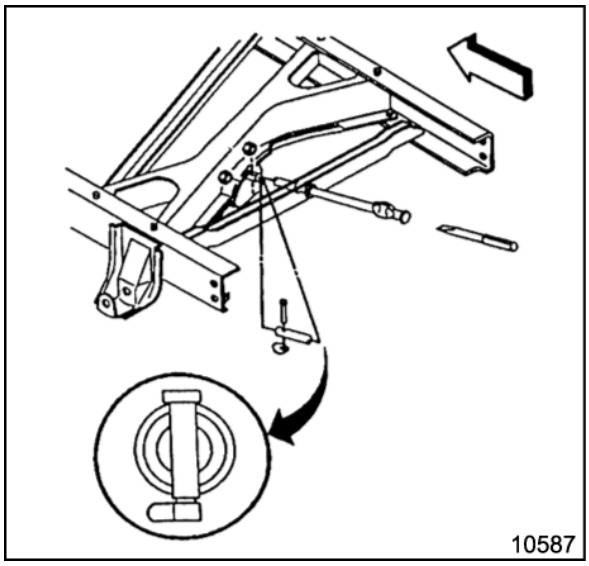
Tires and Wheels

Repair Instructions

Tire Hoist Shaft Extension Replacement

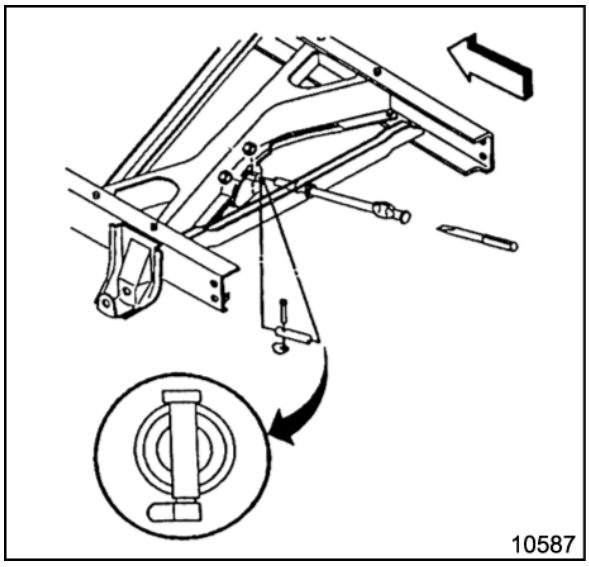
Removal Procedure

1. Remove the spare wheel storage lock cylinder (if equipped). Refer to Changing a Flat in the 2004 C/K Truck Owner's Manual.
2. Remove the spare tire. Refer to Tire Hoist and Shaft Replacement in Tires and Wheels in the 2004 C/K Truck Service Manual.
3. Pull the retainer clip and remove the pin.
4. Remove the tire hoist shaft extension.



Installation Procedure

1. Install the tire hoist shaft extension and align.
2. Install the retainer clip and pin.
3. Install the spare tire. Refer to Tire Hoist and Shaft Replacement in Tires and Wheels in the 2004 C/K Truck Service Manual.
4. Install the spare wheel storage lock cylinder (if equipped). Refer to Changing a Flat in the 2004 C/K Truck Owner's Manual.



Description and Operation

Tires and Wheels

Spare Wheel Hoist Shaft

The spare tire is located under the rear end of the pickup and utility models.

The hoist shaft allows a link between the tire hoist and the military rear bumper. The factory spare tire hoist tools are used to remove the spare. An access hole in the rear of the bumper is provided to allow access. If the tire hoist is damaged it must be replaced.

Refer to Tire Hoist and Shaft Replacement in Tires and Wheels in the 2004 C/K Truck Service Manual.

Section 4

Driveline/Axle

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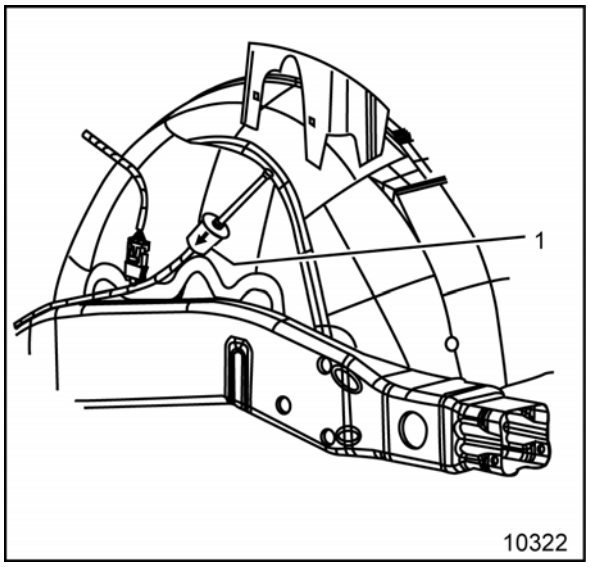
Front Drive Axle

Repair Instructions

Front Axle Vent Tube Filter Replacement

Removal Procedure

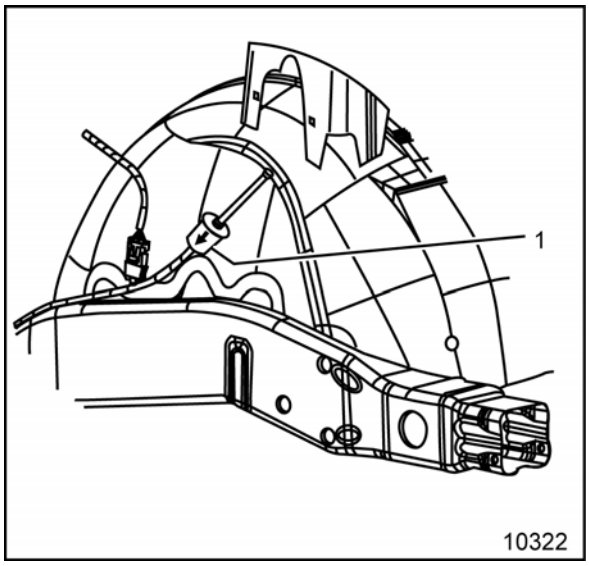
1. Remove the filter (1) from the hoses and discard.



Installation Procedure

Notice: The filter arrow must point toward the axle vent pipe. If replacing the hose, the length of the new hose must match the length of the old hose.

1. Install the filter (1) to the hoses.



Description and Operation

Front Axle Vent Tube Filter Description

The front axle is specially equipped with a vent tube filter to protect the axle from contaminants found in the off-road environment. The vent filter is attached to a hose with a vented cap at the end, and is mounted in the engine compartment next to the left inner wheel housing.

The filter must be inspected occasionally to see if it needs to be replaced. Refer to Periodic Maintenance Inspection in Maintenance and Lubrication.

Rear Drive Axle

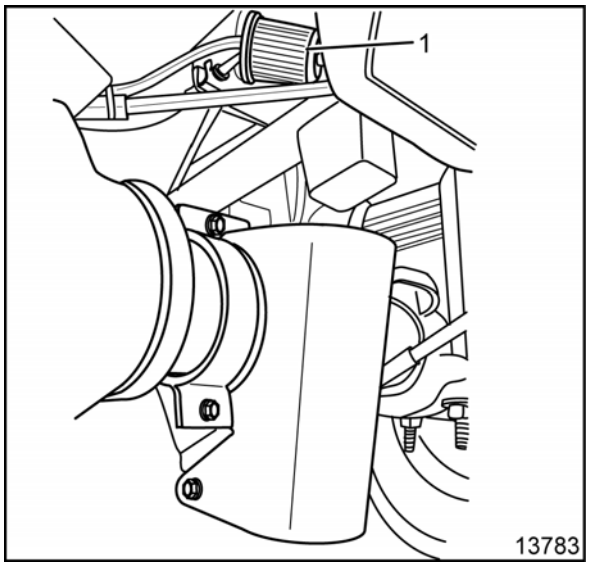
Repair Instructions

Rear Axle Vent Tube Filter Replacement

Removal Procedure

Caution: Refer to Vehicle Lifting Caution in Cautions and Notices.

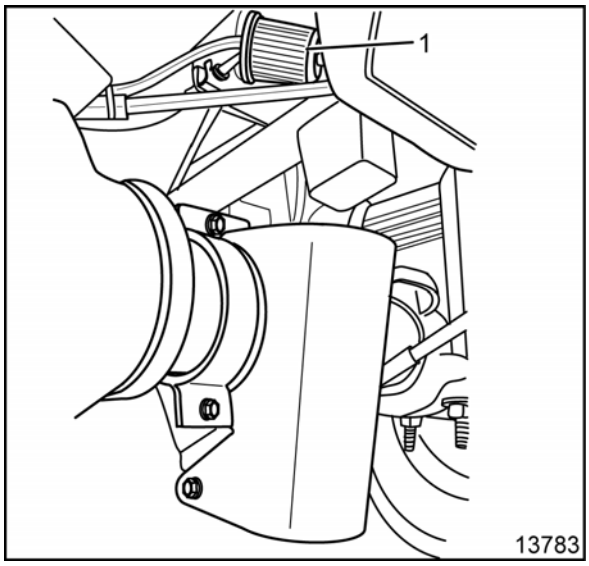
1. Raise and support the vehicle.
2. Install safety stands.
3. Remove the filter (1) from the hoses and discard.



Installation Procedure

Notice: The filter arrow must point toward the axle vent pipe. If replacing the hose, the length of the new hose must match the length of the old hose.

1. Install the filter (1) to the hoses.
2. Remove safety stands.
3. Lower the vehicle.



Description and Operation

Rear Axle Vent Tube Filter Description

The rear axle is specially equipped with a vent tube filter to protect the axle from contaminants found in the off-road environment. It is attached to a hose with a vented cap at the end. The rear axle vent filter is mounted near the top of the axle housing and the hose is attached to the brake bracket on the driver's side frame rail.

The filter must be inspected occasionally to see if it needs to be replaced. Refer to Periodic Maintenance Inspection in Maintenance and Lubrication.

Transfer Case

Repair Instructions

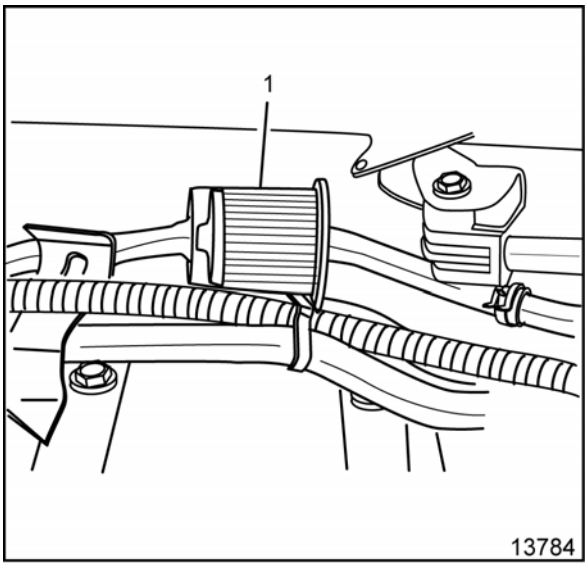
Transfer Case Vent Tube Filter Replacement

Removal Procedure

Note: The filter is located on the left side of the vehicle.

Caution: Refer to Vehicle Lifting Caution in Cautions and Notices.

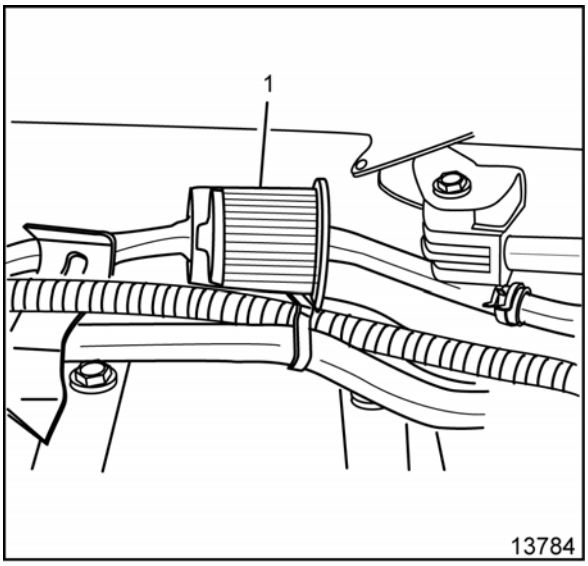
1. Raise and support the vehicle.
2. Install safety stands.
3. Remove the filter (1) from the hose and discard.



Installation Procedure

Notice: The filter arrow must point toward the transfer case. If replacing the hose, the length of the new hose must match the length of the old hose.

1. Install the filter (1) to the hoses.
2. Remove safety stands.
3. Lower the vehicle.



Description and Operation

Transfer Case Vent Tube Filter Description

The transfer case is specially equipped with a vent tube filter to protect the transfer case from contaminants found in the off-road environment. The vent filter is attached to a hose with a vented cap at the end, and is mounted under the vehicle next to the left side of the transfer case.

The filter must be inspected occasionally to see if it needs to be replaced. Refer to Periodic Maintenance Inspection in Maintenance and Lubrication.

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Engine Electrical

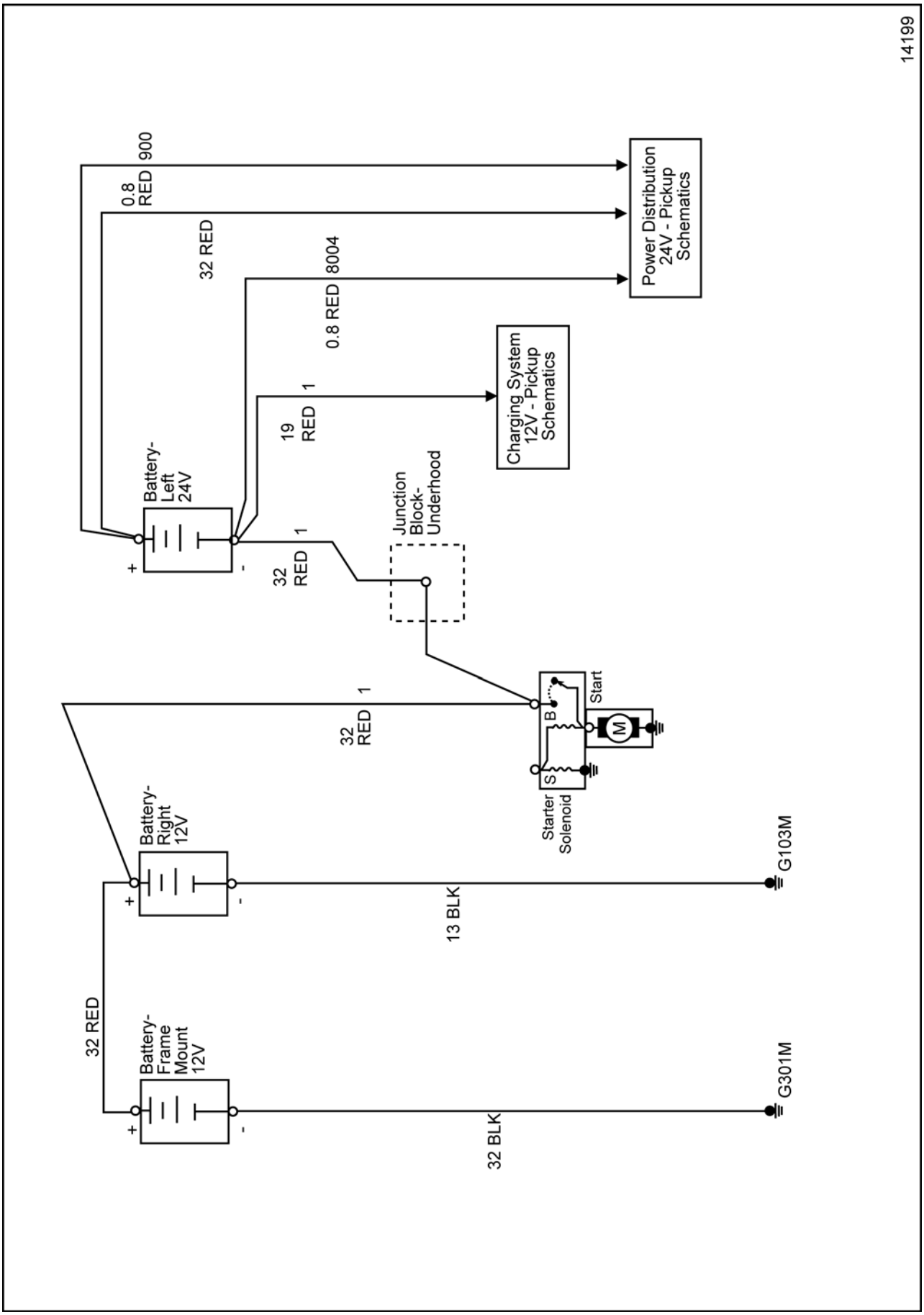
Specifications

Fastener Tightening Specifications

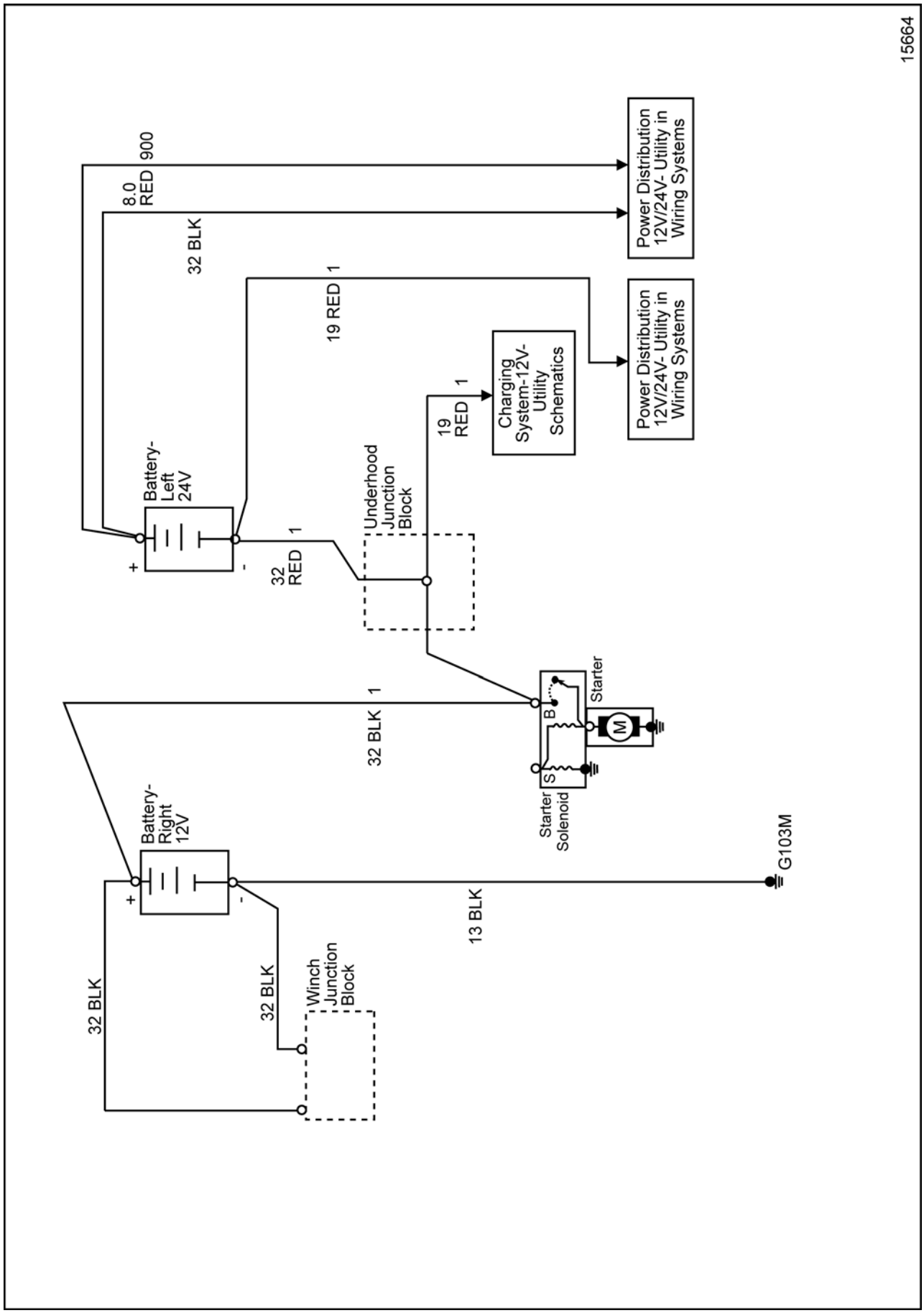
Application	Specification	
	Metric	English
Battery Cable Connections	17 N•m	13 lb ft
Battery Retainer Bolt	25 N•m	18 lb ft
Circuit Breaker Bracket Bolts	6 N•m	53 lb in
Converter Connections	12 N•m	110 lb in
Converter Fuse Nuts	12 N•m	110 lb in
Converter Mounting Bolts	6-10 N•m	53-89 lb in
Generator Mounting Bolts	50 N•m	37 lb ft
Generator Output Stud Nut	9 N•m	80 lb in
Vehicle Load Disconnect Switch Nuts	9 N•m	80 lb in

Schematic and Routing Diagrams

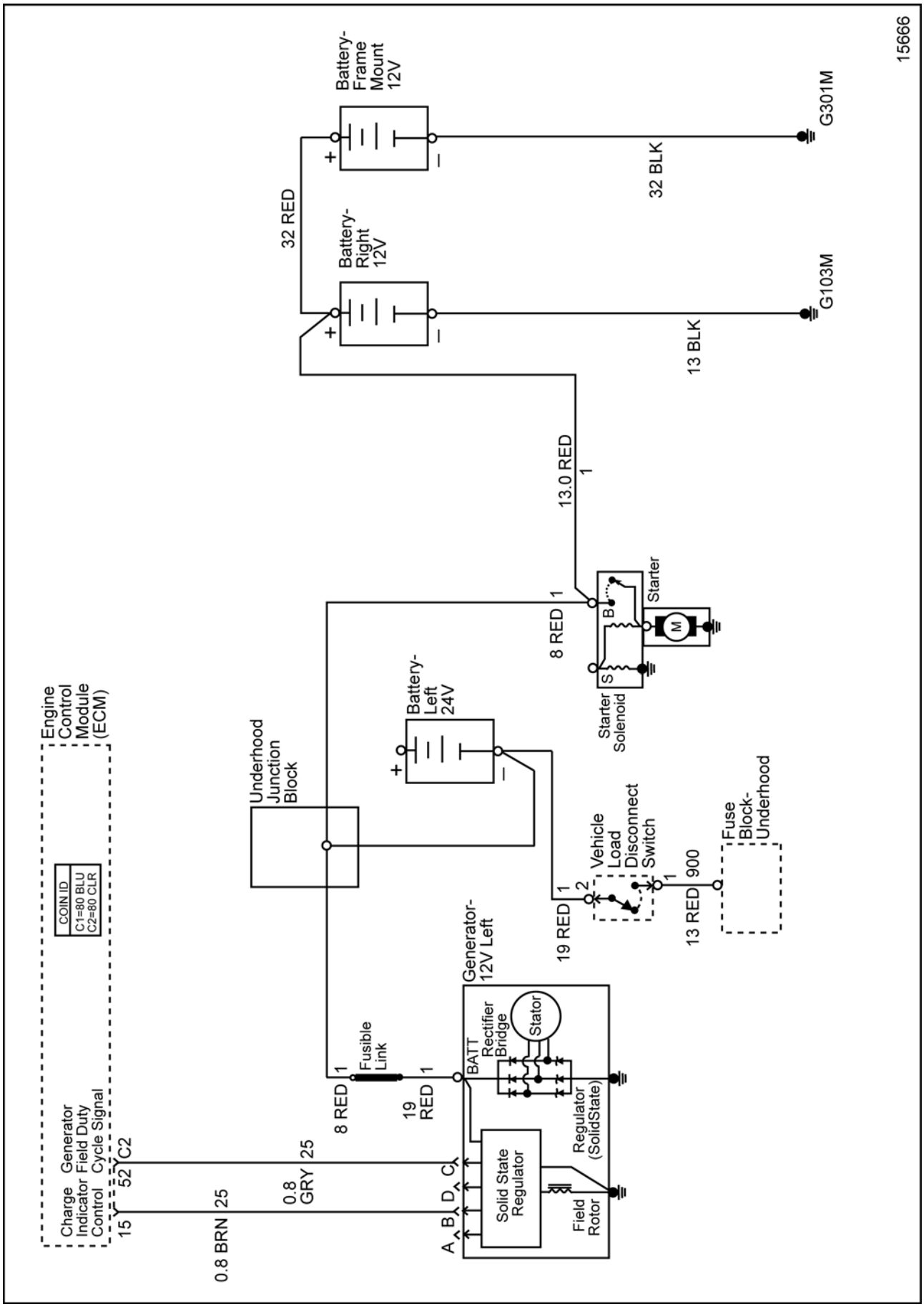
Battery Schematic – Pickup



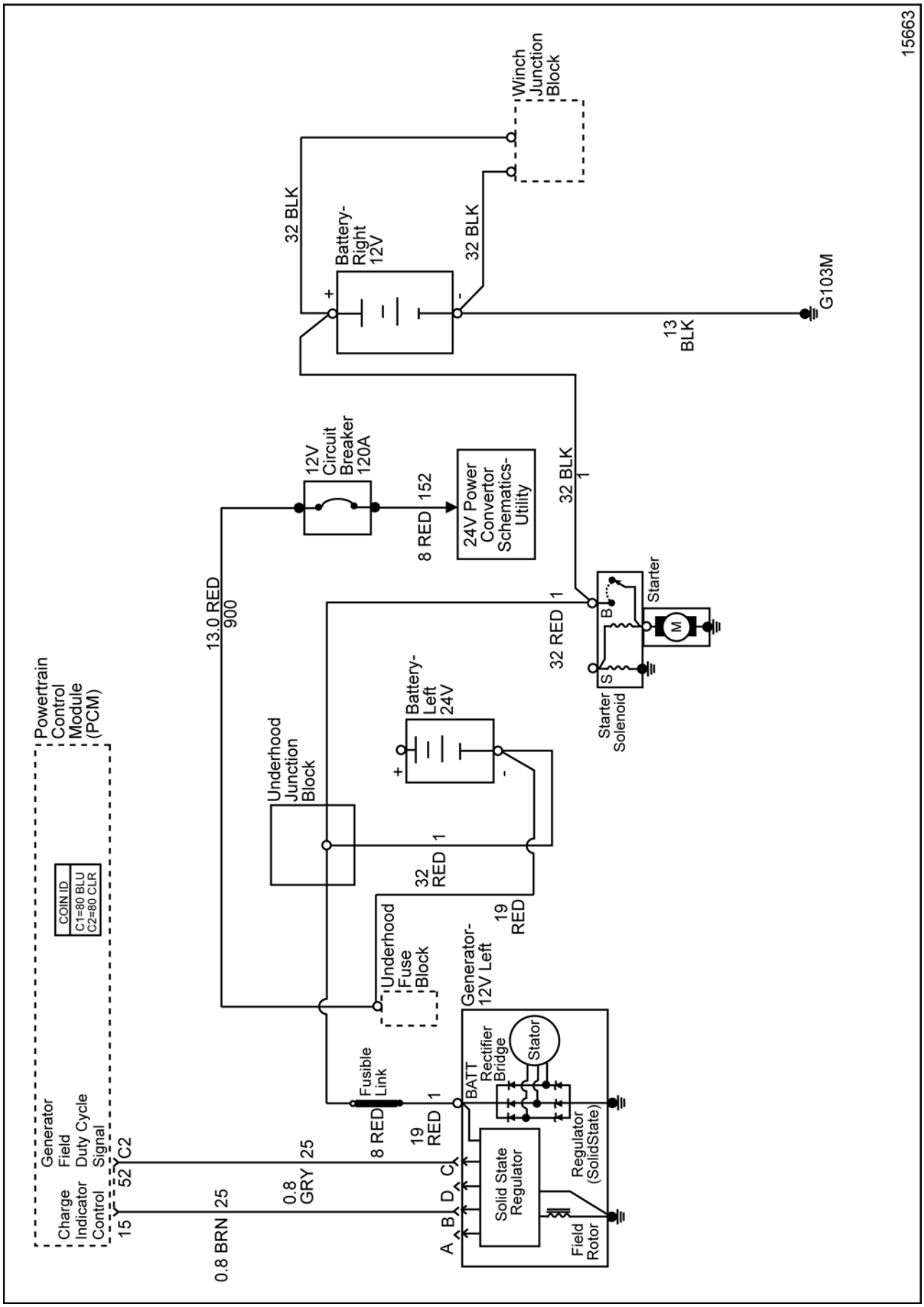
Battery Schematic – Utility



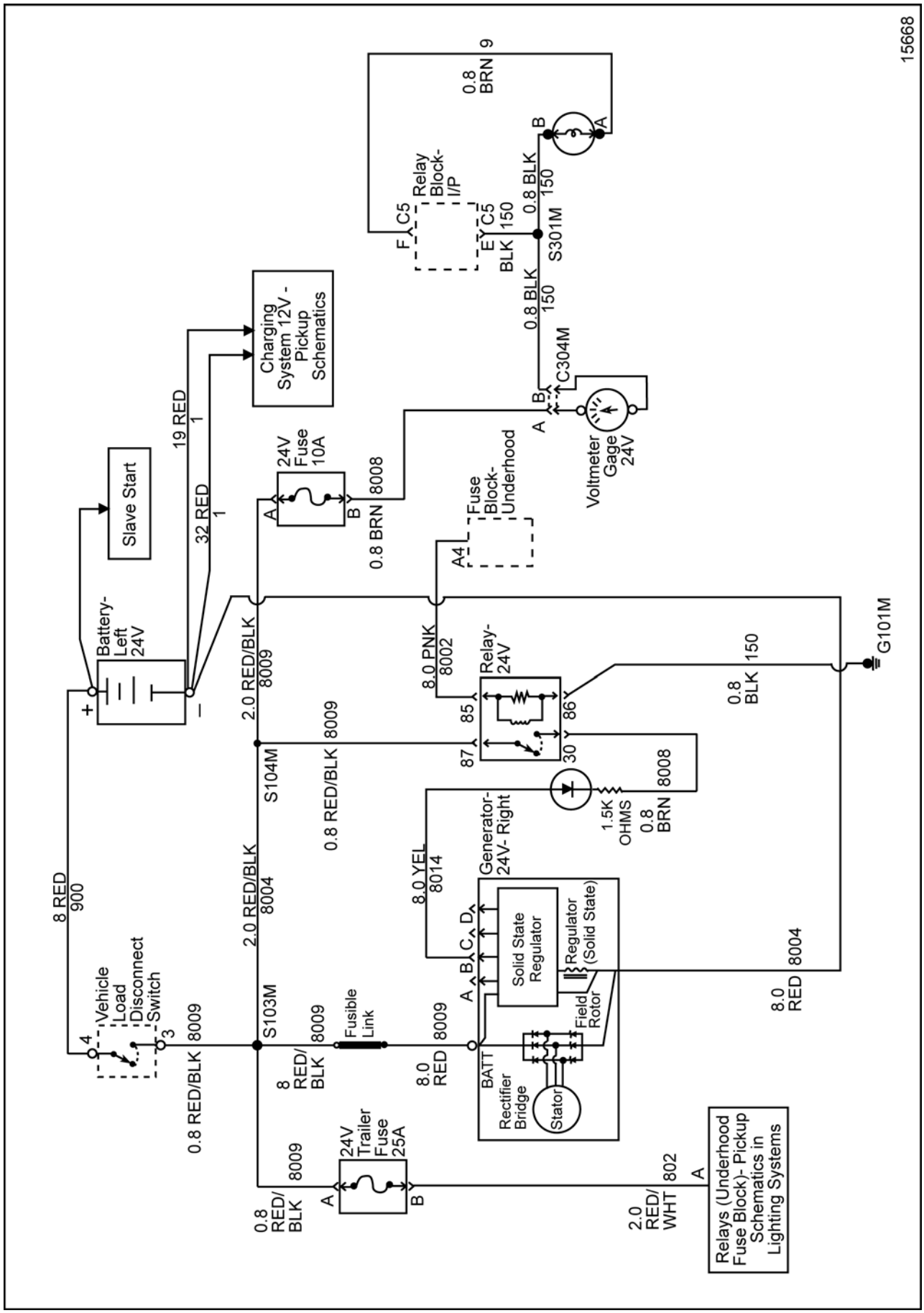
Charging Schematics 12V – Pickup



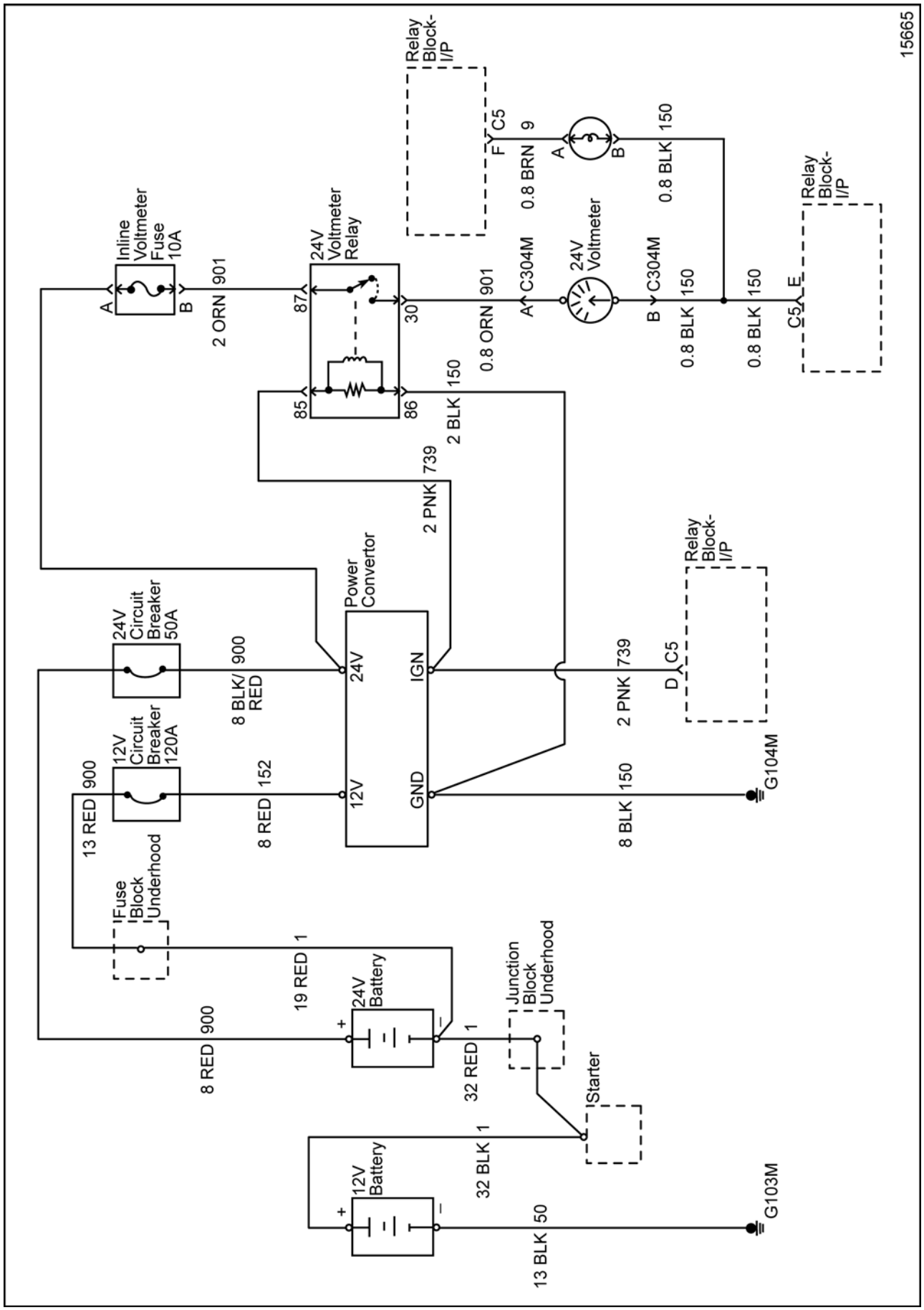
Charging Schematics 12V – Utility



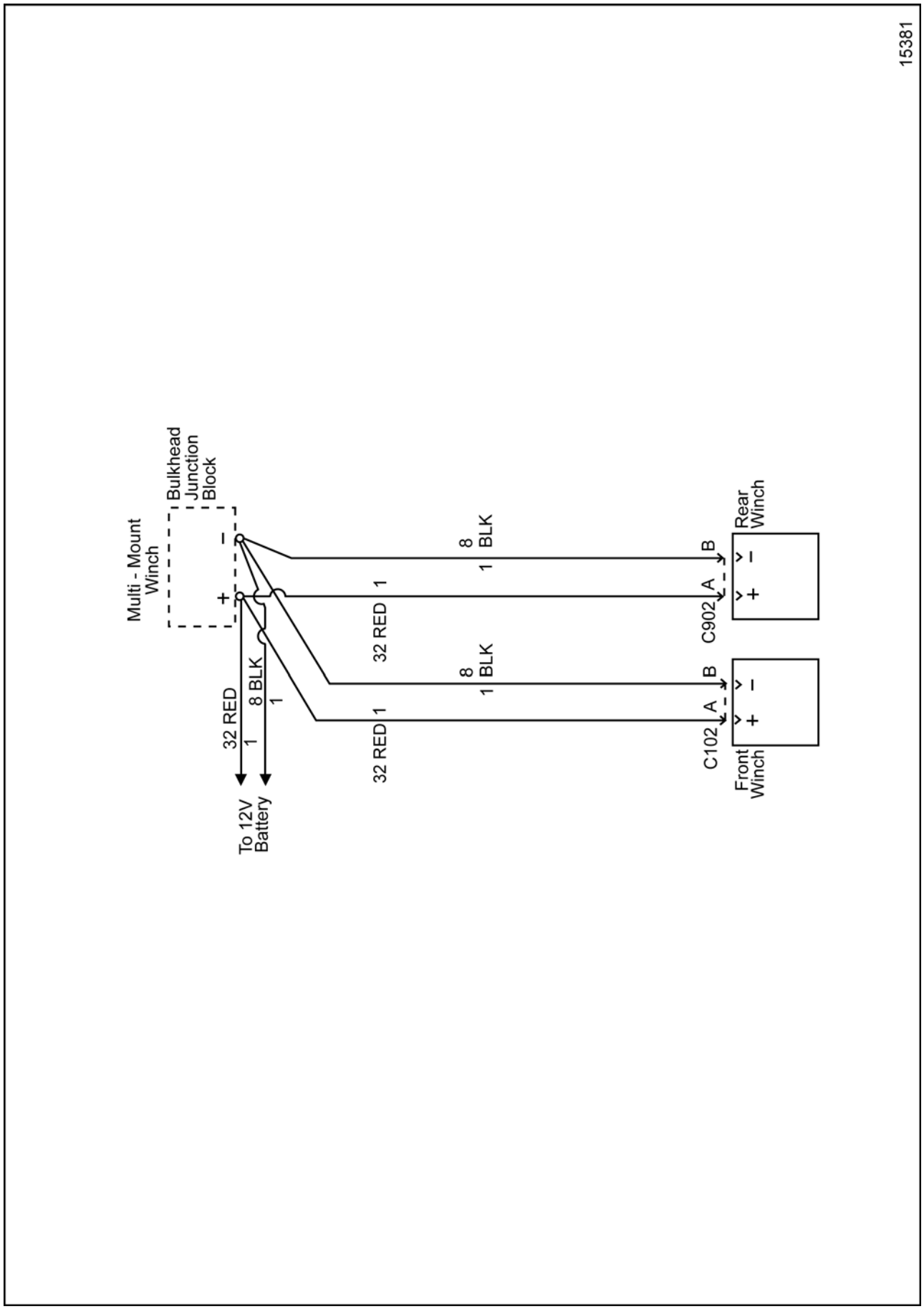
Charging Schematics 24V – Pickup



24V Power Converter Schematics – Utility



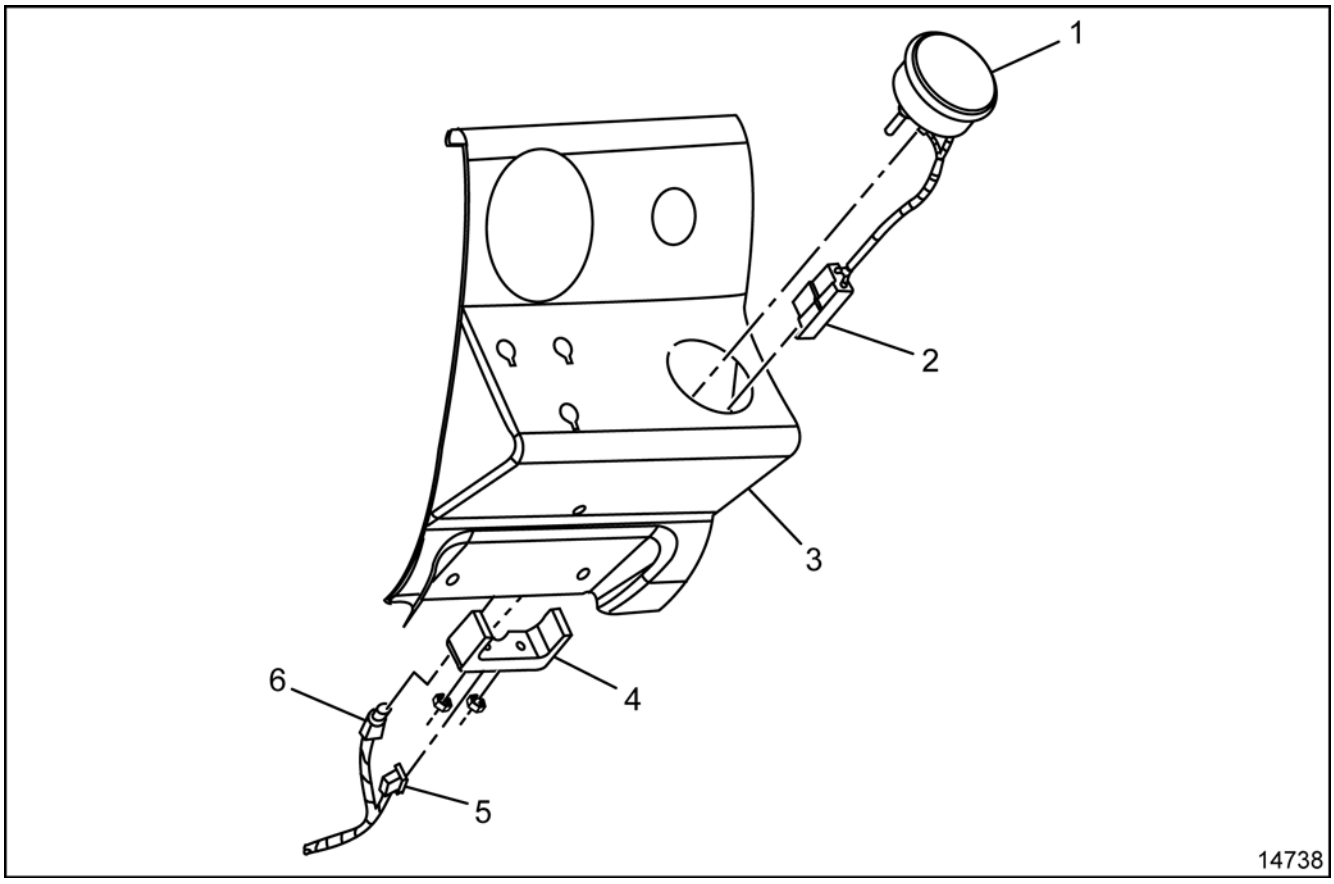
Winch Prep Wiring Schematics



Component Locator

Starting and Charging Component Views

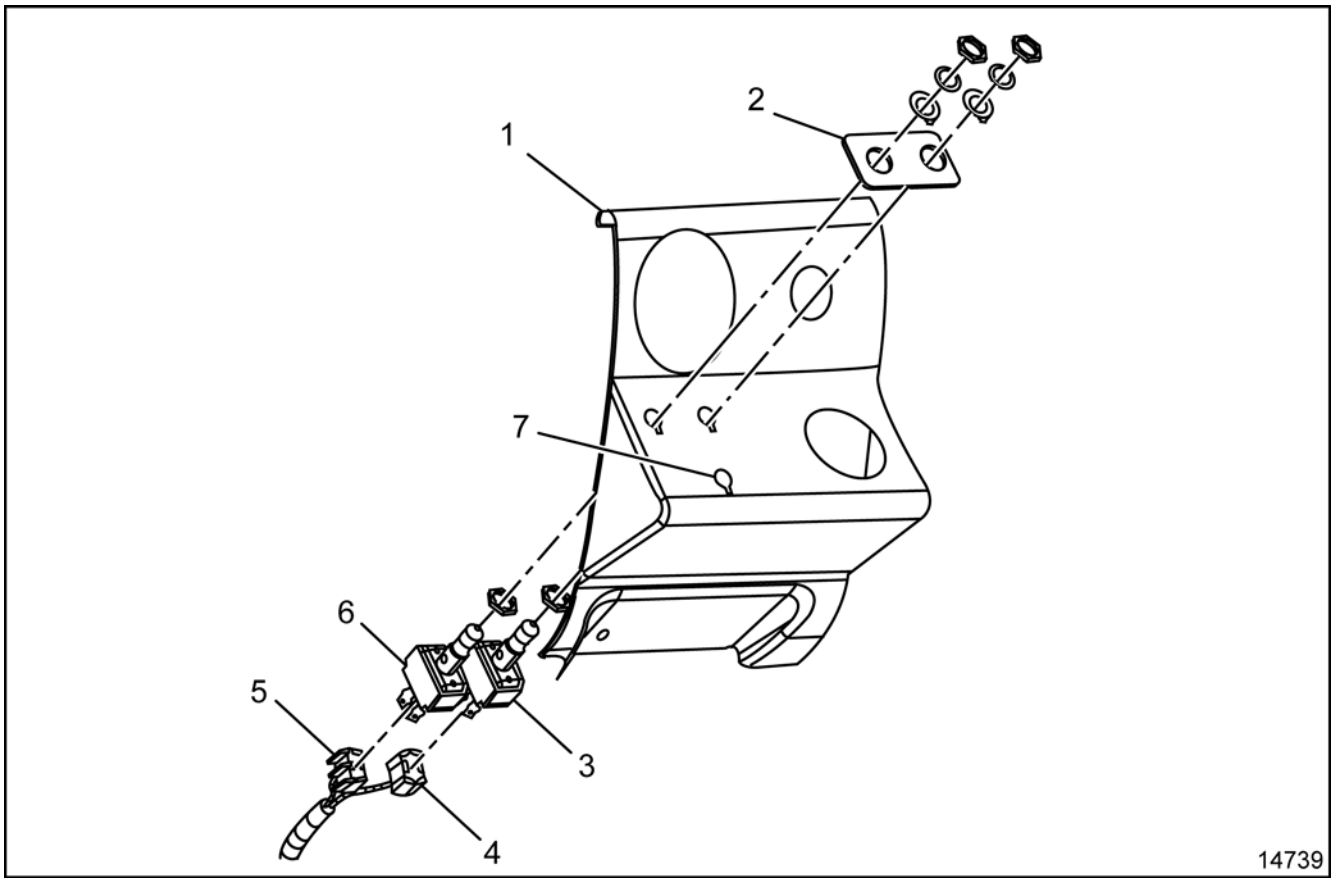
Voltmeter and Lamp



Legend

(1) Voltmeter (24V)
(2) Voltmeter Connector
(3) Accessory Panel
(4) Voltmeter Bracket
(5) Harness Connector
(6) Voltmeter Illumination Bulb

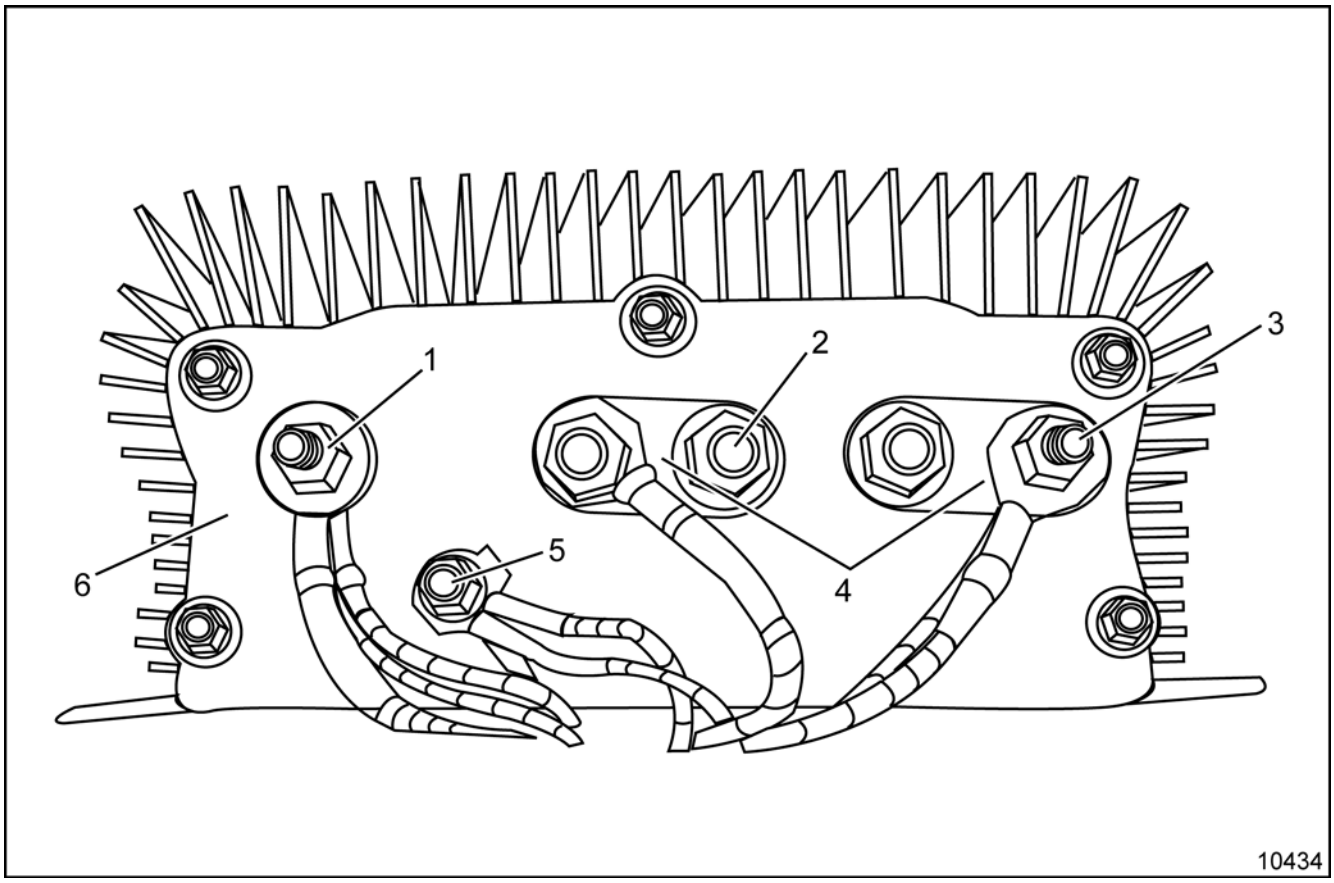
Blackout (B/O) Lamp Switches



Legend

(1) Accessory Panel
(2) Switch Position Label
(3) Blackout (B/O) Control Switch
(4) Control Switch Connector
(5) Drive Lamp Switch Connector
(6) Blackout (B/O) Drive Lamp Switch
(7) Accessory Switch Openings

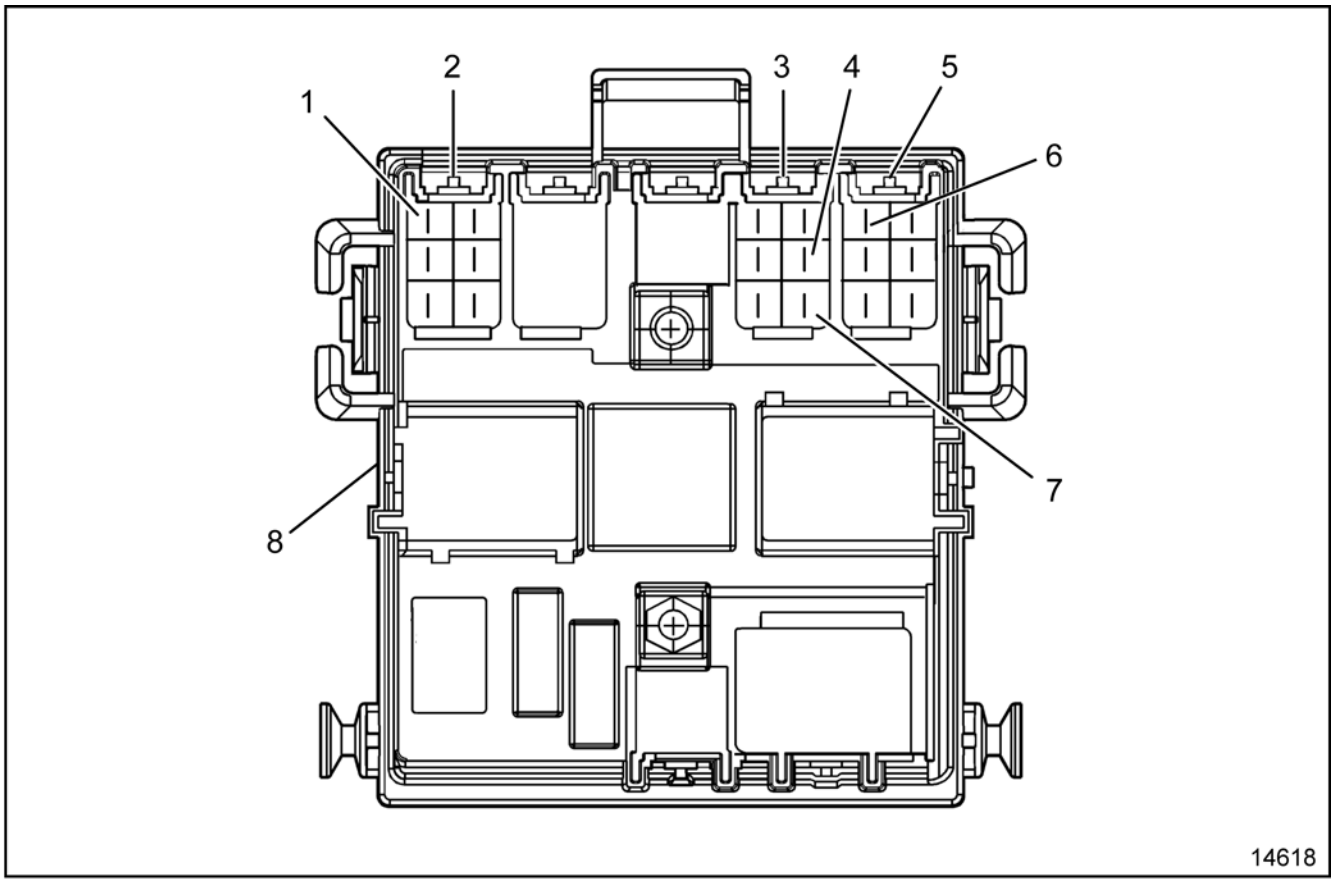
Power Converter



Legend

(1) Ground Terminal
(2) 12V Terminal
(3) 24V Terminal
(4) Fuse Link Covers
(5) Ignition Terminal
(6) Power Converter 41204 (Utility Only)

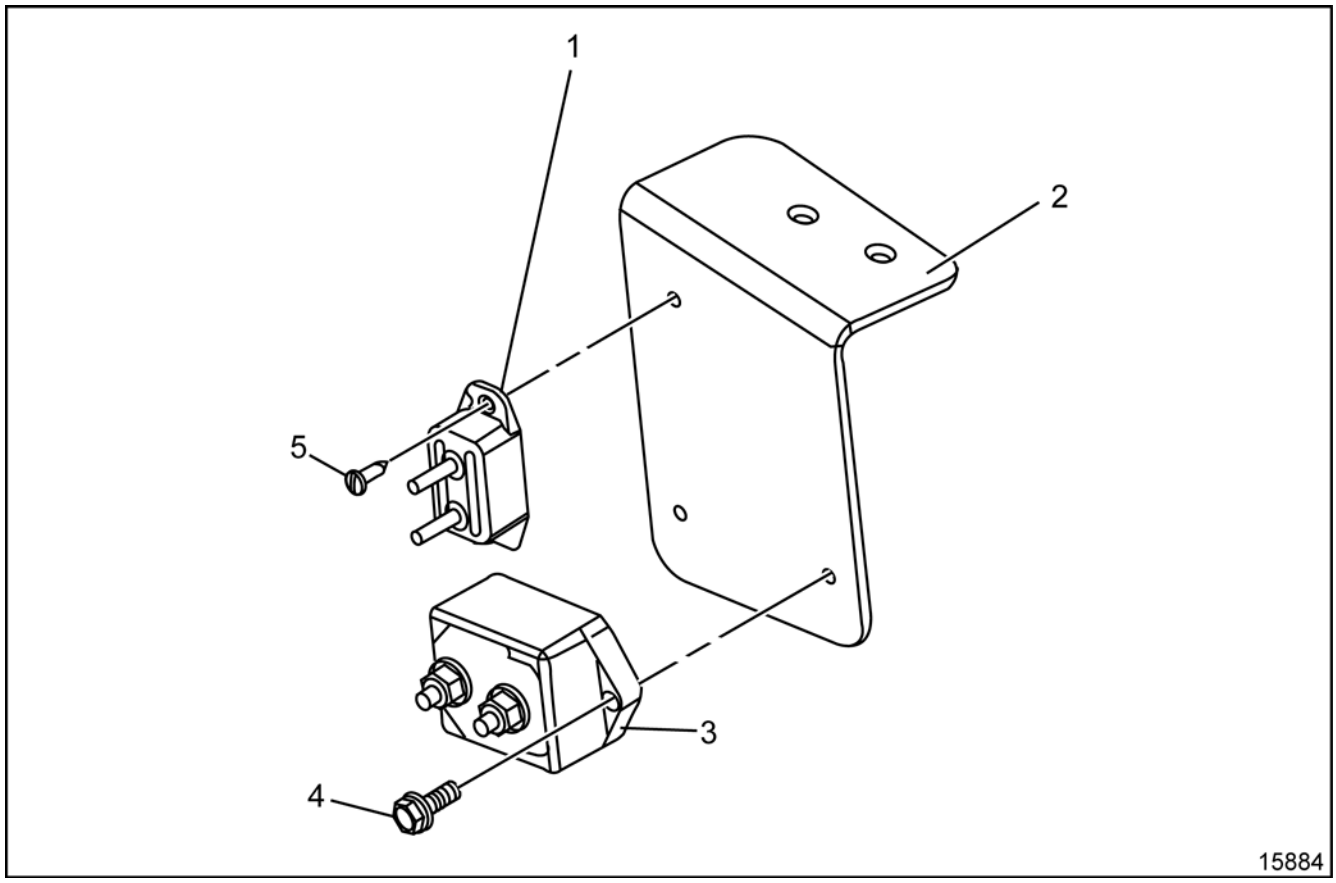
Relay Block – I/P



Legend

(1) Cavity C – Blackout (B/O) Switch
(2) C8 – Connector Location
(3) C5 – Connector Location
(4) Cavity E – 24V Meter Ground
(5) C4 – Connector Location
(6) Cavity D – MAP/Receptacle (If equipped)
(7) Cavity F – 24V Meter Supply Voltage
(8) Relay Block – I/P

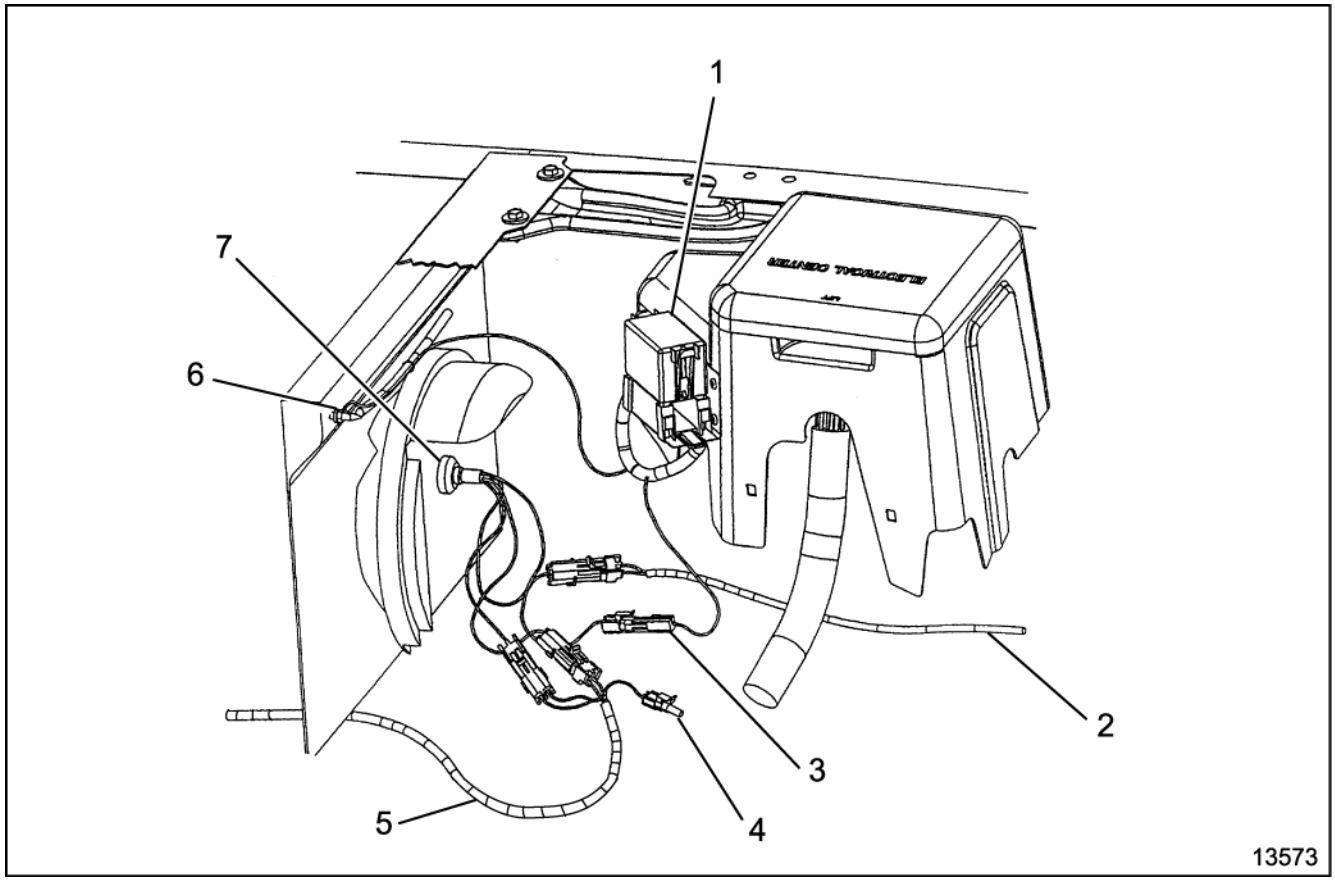
12V and 24V Circuit Breakers



Legend

(1) 50 amp 24V Circuit Breaker
(2) Circuit Breaker Bracket
(3) 120 amp 12V Circuit Breaker
(4) Bolt
(5) Screw

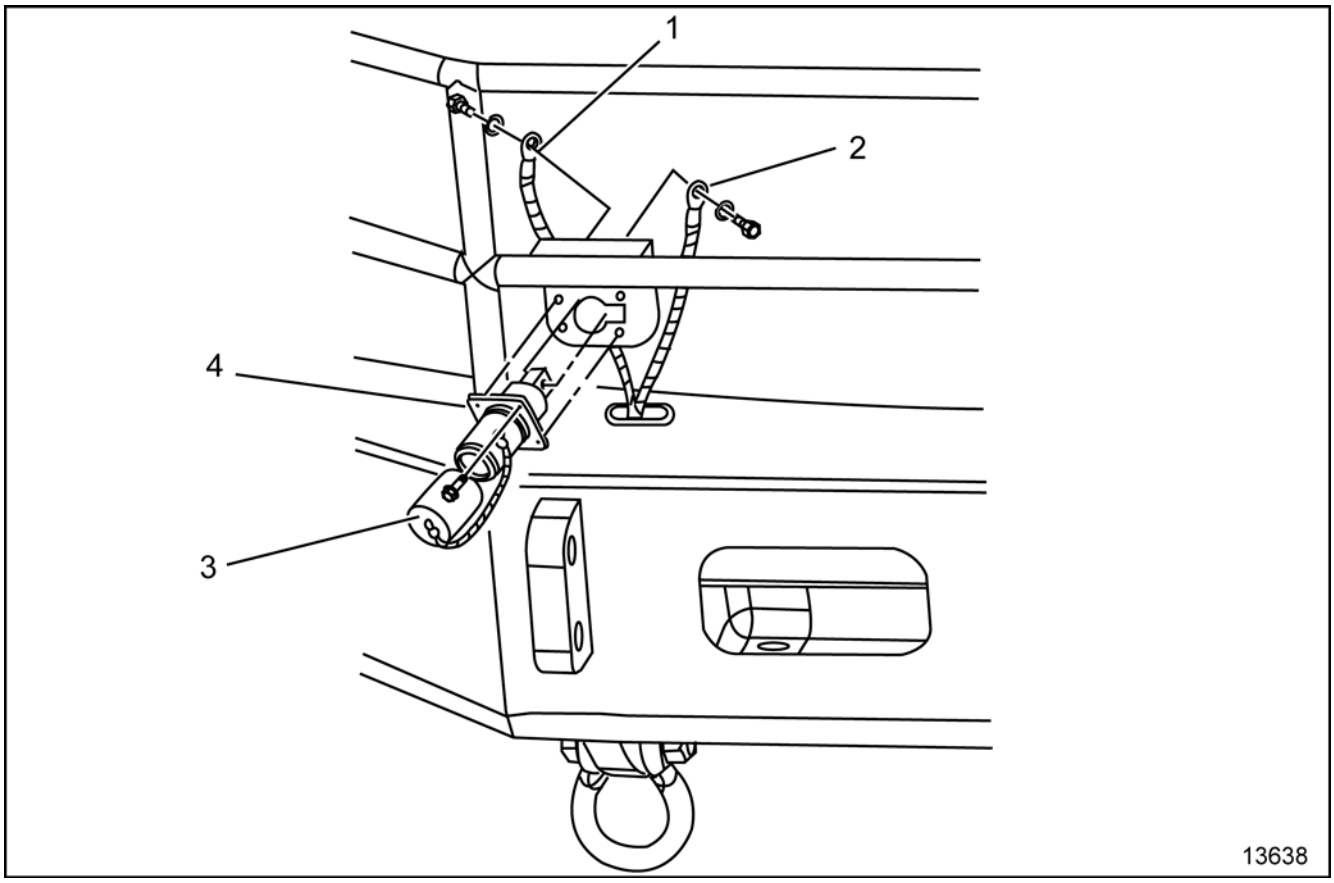
Underhood Wiring



Legend

(1) Interrupt Relays
(2) To Front Blackout (B/O) Lamps
(3) To Ground Stud
(4) To Engine Harness
(5) To Rear Extension Harness
(6) Ground Stud
(7) Blackout (B/O) Panel Harness

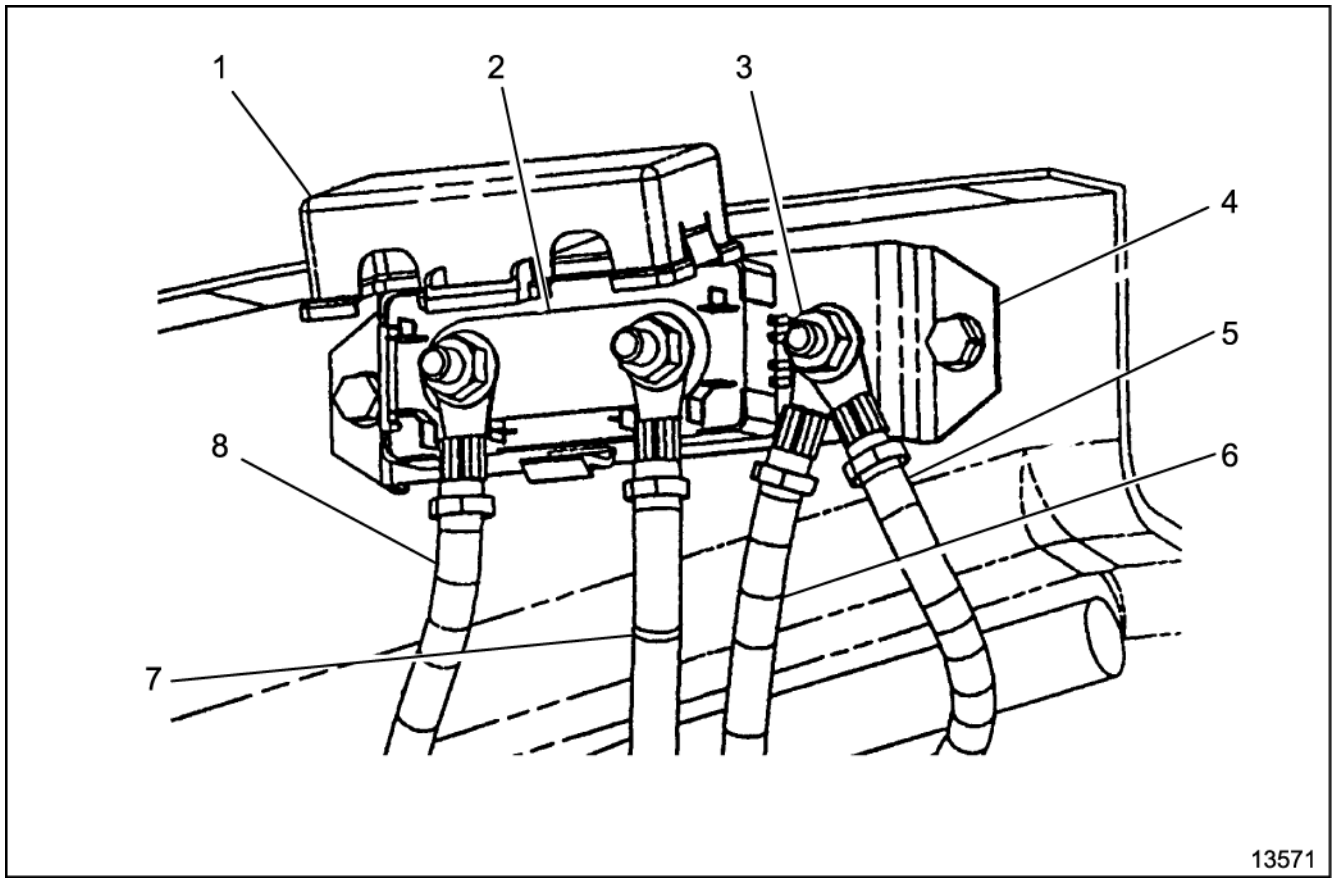
24V Slave Receptacle Assembly



Legend

(1) Battery Negative Ground (Black)
(2) Battery Positive Ground (Red)
(3) Slave Receptacle Cover
(4) Slave Receptacle

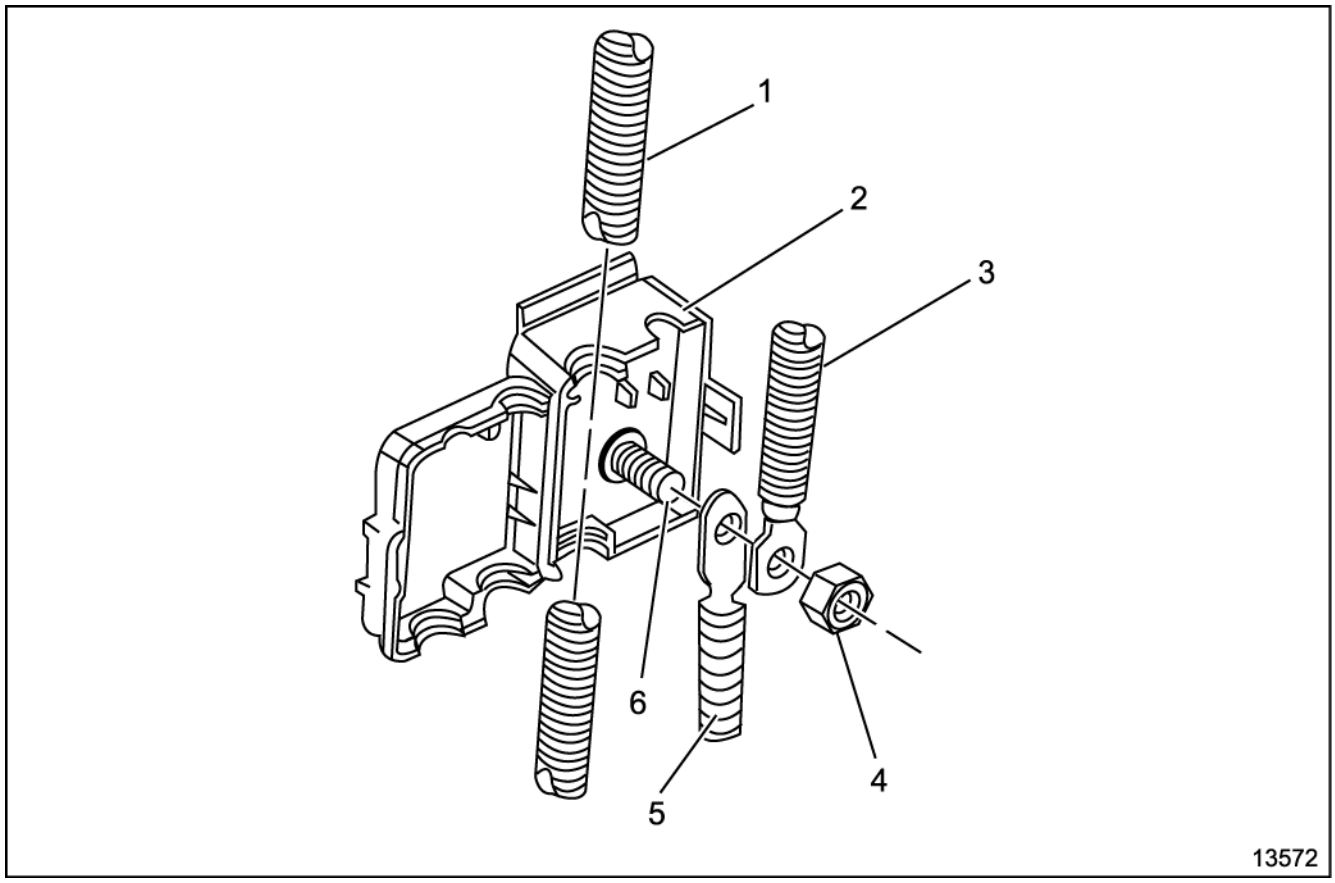
Bulkhead Junction Block



Legend

(1) Junction Block
(2) Jumper Plate
(3) Ground Connection
(4) Mounting Bracket
(5) Negative Winch Prep Cable Rear
(6) Battery Negative Cable
(7) Battery Positive Cable
(8) Positive Winch Prep Cable Rear

Winch Cable and Starter Cable Junction Block

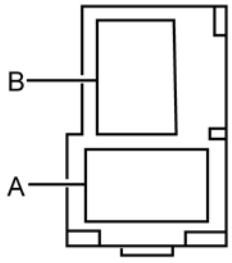


Legend

(1) Battery Positive Cable
(2) Junction Block
(3) Generator Output Cable
(4) Junction Block Post Nut
(5) Positive Winch Prep Cable – Front
(6) Junction Block Post

Starting and Charging Connector End Views

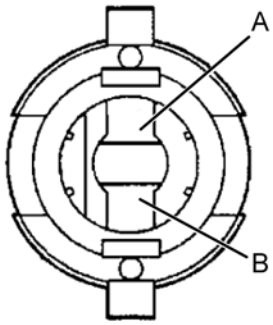
Voltmeter Connector



10547

Connector Part Information	• 02973781 • 2-Way Series 280 (BLK)		
Pin	**Wire Color**	**Circuit No.**	**Function**
A	BRN	8008	Voltmeter Supply Voltage
B	BLK	150	Ground

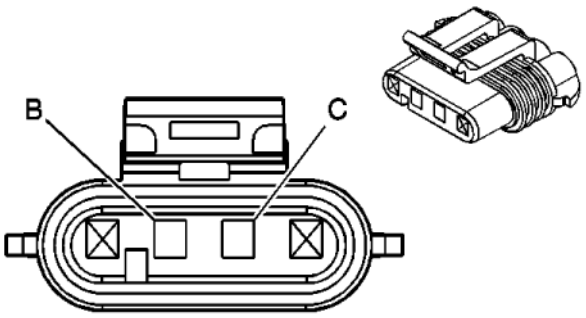
Voltmeter Lamp



7927

Connector Part Information	• 12004264 • 2F LP SOC Hardshell (BLK)		
Pin	**Wire Color**	**Circuit No.**	**Function**
A	BRN	9	Voltmeter Supply Voltage
B	BLK	150	Ground

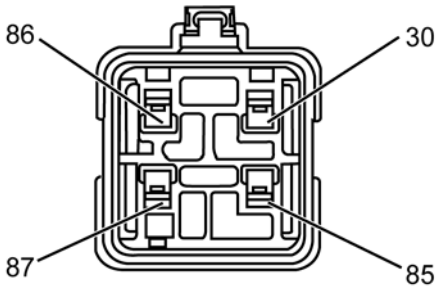
Generator Connector



7862

Connector Part Information	• 15355066 • 4-Way F Metri-Pack 150 Series Sealed (NAT)		
Pin	**Wire Color**	**Circuit No.**	**Function**
A	___	___	Not Used
B	YEL	8014	Generator Field Duty Cycle Signal
C-D	___	___	Not Used

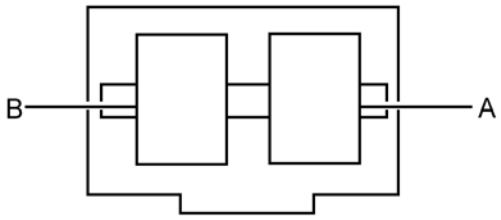
24V Generator Relay



10550

Connector Part Information	• 12129716 • 4-Way F MP Series 280 (GRY)		
Pin	**Wire Color**	**Circuit No.**	**Function**
30	BRN	8008	Operator Field Duty Cycle Signal
85	PNK	8002	UBEC Cavity A3
86	BLK	150	Ground
87	RED/BLK	8009	24V Battery Supply Voltage

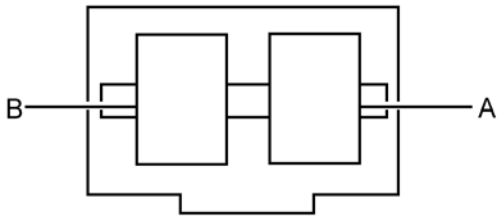
24V Trailer Fuse



10567

Connector Part Information	• 12010105 • 2-Way F Auto Fuse Holder		
Pin	**Wire Color**	**Circuit No.**	**Function**
A	RED/BLK	8009	24V Battery Voltage
B	RED/WHT	802	Trailer Connector Supply Voltage

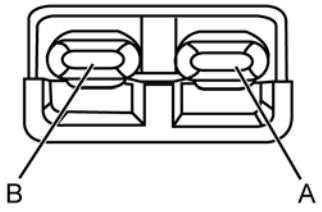
24V Auxiliary Fuse



10567

Connector Part Information	• 12010105 • 2-Way F Auto Fuse Holder		
Pin	**Wire Color**	**Circuit No.**	**Function**
A	RED/BLK	8009	24V Battery Voltage
B	RED/BLK	8009	24V Feed (Not Used)

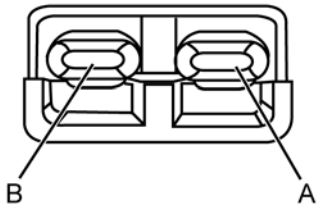
Multi-Mount Winch Prep Connector – Front



10804

Connector Part Information	• TX017639 • 2-Way (RED)		
Pin	**Wire Color**	**Circuit No.**	**Function**
A	BLK/RED	1	Supply Voltage
B	BLK	150	Ground

Multi-Mount Winch Prep Connector – Rear



10804

Connector Part Information	• TX017640 • 2-Way (RED)		
Pin	**Wire Color**	**Circuit No.**	**Function**
A	BLK/RED	1	Supply Voltage
B	BLK	150	Ground

Diagnostic Information and Procedures

Symptom List

Note: For vehicle no start condition, refer to Diagnostic System Check in Engine Controls – 6.6L in the 2004 C/K Truck Service Manual.

Refer to a symptom diagnostic procedure from the following list in order to diagnose the symptom:

- Voltmeter Lamp Inoperative
- Voltmeter Inoperative (Utility)
- Voltmeter Inaccurate or Inoperative (Pickup)
- 24V Generator Noise Diagnosis
- 24V Generator Inoperative (Pickup)
- Battery Inspection Test
- Power Converter Inoperative (Utility)
- Power Converter Test

Voltmeter Lamp Inoperative

Voltmeter Lamp Inoperative

Step	Action	Yes	No
Schematic Reference: Engine Electrical Schematics			
1	Did you review the Charging System Description and Operation?	Go to Step 2	Go to Description and Operation
2	Connect a test lamp between cavity A of the voltmeter bulb and ground. Does the test lamp illuminate?	Go to Step 3	Go to Step 4
3	Connect a self-powered test lamp to cavity B and ground. Does the test lamp illuminate?	Go to Step 5	Go to Step 6
4	Locate and repair the open or high resistance in circuit 9. Did you complete the repair?	Go to Step 7	—
5	Replace the voltmeter bulb. Did you complete the replacement?	Go to Step 7	—
6	Locate and repair the open or high resistance in circuit 150. Did you complete the repair?	Go to Step 7	—
7	Operate the system in order to verify the repair. Did you correct the condition?	System OK	Go to Step 2

Voltmeter Inoperative (Utility)

Diagnostic Aids

The 24V Battery must be fully charged before testing the voltmeter for proper operation. Refer to Battery Inspection/Test (24V).

Voltmeter Inoperative (Utility)

Step	Action	Yes	No
Schematic Reference: Engine Electrical Schematics			
1	Did you review the Charging System Description and Operation?	Go to Step 2	Go to Description and Operation
2	1. Disconnect the voltmeter relay. 2. Connect a test lamp from the voltmeter relay connector terminal 87 to ground. Does the test lamp illuminate?	Go to Step 3	Go to Step 9
3	Connect a test lamp from the voltmeter relay connector terminal 85 to ground. Does the test lamp illuminate?	Go to Step 4	Go to Step 10
4	Connect a test lamp between the voltmeter relay connector terminals 87 and 86. Does the test lamp illuminate?	Go to Step 5	Go to Step 11
5	Connect a 15A fused jumper between the voltmeter relay connector terminals 87 and 30. Does the voltmeter function?	Go to Step 14	Go to Step 6
6	1. Reconnect the voltmeter relay. 2. Disconnect the voltmeter. 3. Connect a test lamp from the voltmeter connector terminal B to battery voltage. Does the test lamp illuminate?	Go to Step 7	Go to Step 12
7	Connect a test lamp from the voltmeter connector terminal A to ground. Does the test lamp illuminate?	Go to Step 8	Go to Step 13
8	1. Inspect the voltmeter for a poor connection. 2. If the connection is OK, replace the voltmeter. Refer to Voltmeter Replacement in Instrument Panel, Gages and Console. Is the replacement complete?	Go to Step 15	___
9	Repair an open or a poor connection in circuit 901 between the voltmeter relay terminal 87 and the 24V terminal of the power converter. Is the repair complete?	Go to Step 15	___
10	Repair an open or a poor connection in circuit 739 between the voltmeter relay terminal 85 and the IGN terminal of the power converter. Is the repair complete?	Go to Step 15	___

Voltmeter Inoperative (Utility) (cont'd)

Step	Action	Yes	No
11	Repair an open or a poor connection in circuit 150 between the voltmeter relay terminal 86 and the GND terminal of the power converter. Is the repair complete?	Go to Step 15	—
12	Repair the open in circuit 150 between the voltmeter terminal B and ground. Is the repair complete?	Go to Step 15	—
13	Repair the open in circuit 901 between the voltmeter relay terminal 30 and the voltmeter terminal A. Is the repair complete?	Go to Step 15	—
14	1. Inspect for a poor connection at the voltmeter relay. 2. If the connection is OK, replace the relay. Refer to Relay Replacement – 24V Generator. Is the replacement complete?	Go to Step 15	—
15	Operate the system in order to verify the repair. Did you correct the condition?	System OK	Go to Step 3

Voltmeter Inaccurate or Inoperative (Pickup)

Voltmeter Inaccurate or Inoperative (Pickup)

Step	Action	Yes	No
Schematic Reference: Engine Electrical Schematics			
1	Did you review the Charging System Description and Operation?	Go to Step 2	Go to Description and Operation
2	1. Turn the ignition ON, with the engine OFF. 2. With a DMM, measure the voltage of the 24V battery and compare the voltage value with the voltmeter display. Does the voltmeter display approximately the same value as the battery voltage?	Go to 24V Generator Inoperative	Go to Step 3
3	Test the battery voltage circuit of the voltmeter for an open, for a short to ground, or for a high resistance. Did you find and correct the condition?	Go to Step 6	Go to Step 4
4	Test the ground circuit 150 of the voltmeter for an open or for a high resistance. Did you find and correct the condition?	Go to Step 6	Go to Step 5
5	Replace the voltmeter. Refer to Voltmeter Replacement in Instrument Panel, Gages and Console. Did you complete the replacement?	Go to Step 6	—
6	Operate the system in order to verify the repair. Did you correct the condition?	System OK	Go to Step 2

24V Generator Noise Diagnosis

Diagnostic Aids

Noise from a generator may be due to electrical or mechanical noise. Electrical noise, or magnetic whine usually varies with the electrical load placed on the generator and is a normal operating characteristic of all generators. When diagnosing a noisy generator, it is important to remember that loose or misaligned components around the generator may transmit the noise into the passenger compartment and that replacing the generator may not solve the problem.

24V Generator Noise Diagnosis

Step	Action	Yes	No
1	Test the generator for proper operation using the generator tester. Refer to Charging System Test in Engine Electrical in 2004 C/K Truck Service Manual. Is the generator operating properly?	Go to Step 2	Go to Step 10
2	1. Start the engine. Verify that the noise can be heard. 2. Turn OFF the engine. 3. Disconnect the 4-way connector from the generator. 4. Start the engine. 5. Listen for the noise. Has the noise stopped?	Go to Step 10	Go to Step 3
3	1. Turn OFF the engine. 2. Remove the drive belt. Refer to Drive Belt Replacement in Engine Mechanical 6.6 L in 2004 C/K Truck Service Manual. 3. Spin the generator pulley by hand. Does the generator shaft spin smoothly and without any roughness or grinding noise?	Go to Step 4	Go to Step 10
4	Inspect the generator for a loose pulley and/or pulley nut. Is the generator pulley or pulley nut loose?	Go to Step 10	Go to Step 5
5	Inspect the generator for the following conditions: • Strained or stretched electrical connections. • Hoses or other vehicle equipment resting on the generator, which may cause the noise to be transmitted into the passenger compartment. Are any electrical connections pulling on the generator or are any hoses, etc. resting on the generator?	Go to Step 6	Go to Step 7
6	1. Reroute the electrical connections to relieve the tension. 2. Reroute the hoses, etc. away from the generator. 3. Start the engine. Has the noise decreased or stopped?	System OK	Go to Step 7
7	Inspect the drive belt for proper tension. Refer to Drive Belt Tensioner Diagnosis in Engine Mechanical 6.6 L in 2004 C/K Truck Service Manual. Is the drive belt loose?	Go to Step 8	Go to Step 9

24V Generator Noise Diagnosis (cont'd)

Step	Action	Yes	No
8	1. Replace the drive belt tensioner. Refer to Drive Belt Tensioner Replacement in Engine Mechanical – 6.6L in 2004 C/K Truck Service Manual. 2. Start the engine. Has the noise decreased or stopped?	System OK	Go to Step 10
9	Compare the vehicle with a known good vehicle. Do both vehicles make the same noise?	System OK	Go to Step 10
10	**Important:** If no definite generator problems were found, be sure that all other possible sources of objectionable noise are eliminated before replacing the generator. Replacing the generator may not change the noise level if the noise is a normal characteristic of the generator or the generator mounting. Replace the generator. Refer to 24V Generator Replacement. Has the noise decreased or stopped?	Go to Step 11	—
11	Operate the system in order to verify the repair. Did you correct the condition?	System OK	Go to Step 2

24V Generator Inoperative (Pickup)

24V Generator Inoperative (Pickup)

Step	Action	Value(s)	Yes	No
Schematic Reference: Engine Electrical				
1	Did you review the Charging System Description and Operation?	—	Go to Step 2	Go to Description and Operation
2	Using a DMM, measure the voltage across the 24V battery terminals. Is the voltage between the specified voltage?	18.0-28.5V	Go to Step 3	Go to Battery Inspection Test (24V)
3	1. Start the engine. 2. Using a DMM, measure the voltage between the generator terminal B and ground. Is the voltage greater than the specified voltage?	7V	Go to Step 4	Go to Step 6
4	Using a DMM, measure the voltage from the BATT terminal and ground. Is the voltage greater than the specified voltage?	7V	Go to Step 5	Go to Step 7
5	Connect a test lamp between ground terminal of the generator and battery negative. Does the test lamp illuminate?	—	Go to Step 8	Go to Step 10
6	Connect a test lamp between terminal 30 of the 24V relay and ground. Does the test lamp illuminate?	—	Go to Step 9	Go to Step 11

24V Generator Inoperative (Pickup) (cont'd)

Step	Action	Value(s)	Yes	No
7	Repair the generator voltage circuit for an open or high resistance. Did you complete the repair?	—	Go to Step 17	—
8	Test the generator ground circuit for an open or high resistance. Did you find and correct the condition?	—	Go to Step 17	Go to Step 10
9	Repair the generator field circuit for an open or high resistance. Did you complete the repair?	—	Go to Step 17	—
10	Replace the generator. Refer to 24V Generator Replacement. Did you complete the replacement?	—	Go to Step 17	—
11	Connect a test lamp between terminal 85 and ground. Did the test lamp illuminate?	—	Go to Step 12	Go to Step 14
12	Connect a test lamp between terminal 86 and ground. Did the test lamp illuminate?	—	Go to Step 16	Go to Step 14
13	Repair the 24V relay control voltage circuit for an open or high resistance. Did you complete the repair?	—	Go to Step 17	—
14	Connect a test lamp between terminal 87 of the 24V relay and ground. Did the test lamp illuminate?	—	Go to Step 15	Go to Step 13
15	Replace the 24V relay. Refer to Relay Replacement – 24V Generator. Did you complete the replacement?	—	Go to Step 17	—
16	Repair the 24V relay ground control circuit for an open or high resistance. Did you complete the repair?	—	Go to Step 17	—
17	Operate the system in order to verify the repair. Did you correct the condition?	—	System OK	Go to Step 2

Battery Inspection/Test (24V)

For testing the dual batteries or 24V battery use Out of Vehicle test for each battery. Refer to Battery Inspection/Test in Engine Electrical in 2004 C/K Truck Service Manual.

Power Converter Inoperative (Utility)

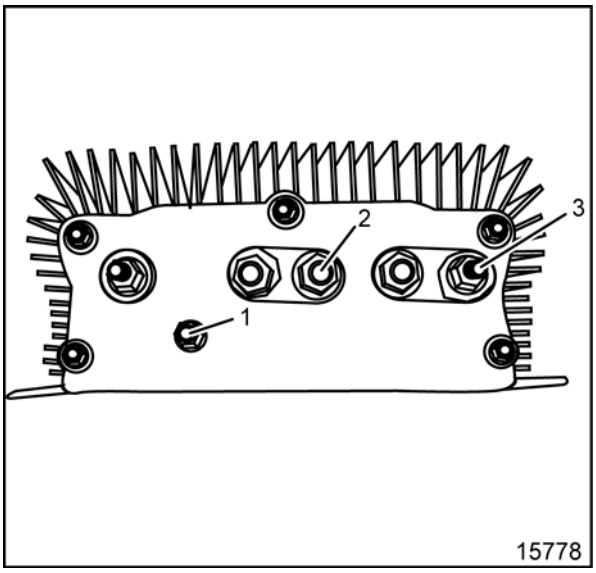
Power Converter Inoperative (Utility)

Step	Action	Yes	No
Schematic Reference: 24V Power Converter Schematics			
1	Did you review the Charging System Description and Operation?	Go to Step 2	Go to Description and Operation
2	Are the batteries properly charged?	Go to Step 3	Go to Battery Charging in Non-HP2 in Engine Electrical of the 2004 C/K Truck Service Manual
3	Connect a test lamp between the shorter 12V stud and ground. Does the test lamp illuminate?	Go to Step 4	Go to Step 5
4	Connect a test lamp between the shorter 24V stud and ground. Does the test lamp illuminate?	Go to Step 11	Go to Step 9
5	Connect a test lamp between the longer 12V stud and ground. Does the test lamp illuminate?	Go to Step 6	Go to Step 7
6	Locate and repair the source of the overload and replace the fuse. Refer to 24V Converter Fuse Replacement. Did you complete the replacement?	Go to Step 24	—
7	Connect a test lamp between the output stud of the 12V circuit breaker and ground. Does the test lamp illuminate?	Go to Step 8	Go to Step 10
8	Locate and repair the open or high resistance in circuit 152. Did you complete the repair?	Go to Step 24	—
9	Connect a test lamp between the longer 24V stud and ground. Does the test lamp illuminate?	Go to Step 14	Go to Step 15
10	Connect a test lamp between the input stud of the 12V circuit breaker and ground. Does the test lamp illuminate?	Go to Step 12	Go to Step 13
11	Connect a test lamp between the IGN stud of the converter and ground. Does the test lamp illuminate?	Go to Step 16	Go to Step 19
12	Inspect for the following conditions: • High resistance or short to ground on circuit 152 • Faulty or weak 12V circuit breaker Did you find and correct the condition?	Go to Step 24	—
13	Locate and repair the open or high resistance in circuit 900. Did you complete the repair?	Go to Step 24	—

Power Converter Inoperative (Utility) (cont'd)

Step	Action	Yes	No
14	1. Locate and repair the source of the overload. 2. Replace the converter fuse. Refer to 24V Converter Fuse Replacement. Did you complete the repair?	Go to Step 24	—
15	Connect a test lamp between the 24V circuit breaker output stud and ground. Does the test lamp illuminate?	Go to Step 20	Go to Step 17
16	Connect a test lamp between the converter GND terminal and ground. Does the test lamp illuminate?	Go to Step 21	Go to Step18
17	Connect a test lamp between the input stud of the 24V circuit breaker and ground. Does the test lamp illuminate?	Go to Step 22	Go to Step 23
18	Replace the power converter. Refer to Power Converter Replacement (Utility). Did you complete the replacement?	Go to Step 24	—
19	Locate and repair the open or high resistance in circuit 739. Did you complete the repair?	Go to Step 24	—
20	Locate and repair the open or high resistance in circuit 900. Did you complete the repair?	Go to Step 24	—
21	Locate and repair the open or high resistance in circuit 150. Did you complete the repair?	Go to Step 24	—
22	Inspect for the following conditions: • High resistance or short to ground on circuit 900 • Faulty or weak 24V circuit breaker Did you find and correct the condition?	Go to Step 24	—
23	Locate and repair the open or high resistance in circuit 900. Did you complete the repair?	Go to Step 24	—
24	Operate the system in order to verify the repair. Did you correct the condition?	System OK	Go to Step 2

Power Converter Test

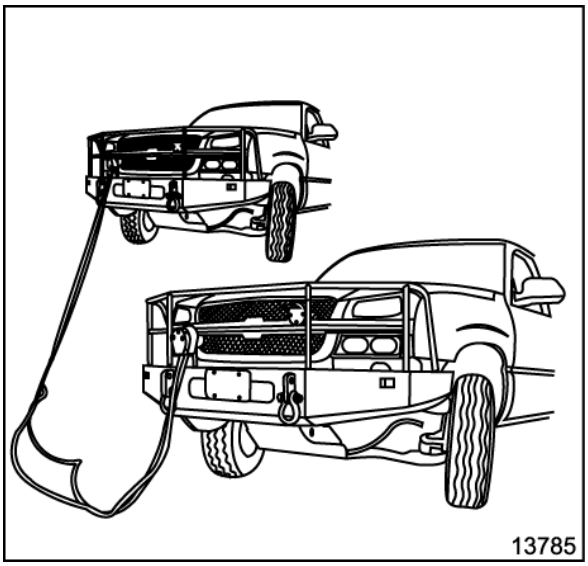


Notice: Do not let the converter terminal contact any surface. This will cause an electrical short and may damage the converter or the vehicle.

1. Clean and tighten converter connections.
2. Start the engine
3. Verify that the vehicle charging system is operating correctly. Refer to Charging System Test CS/AD/SI Generators in Engine Electrical of the 2004 C/K Truck Service Manual.
4. Using a DMM verify that 12V is present at the IGN terminal (1) of the converter.
5. Apply 10 amps of 24V load.
6. Using a DMM measure the 12V input voltage (2) and the 24V output voltage (3).
   The 24V output voltage should be two times the 12V input voltage ±0.3 volts. If the voltage is not within the voltage value, replace the converter. Refer to Power Converter Replacement (Utility).

Repair Instructions

Jump Starting in Case of Emergency

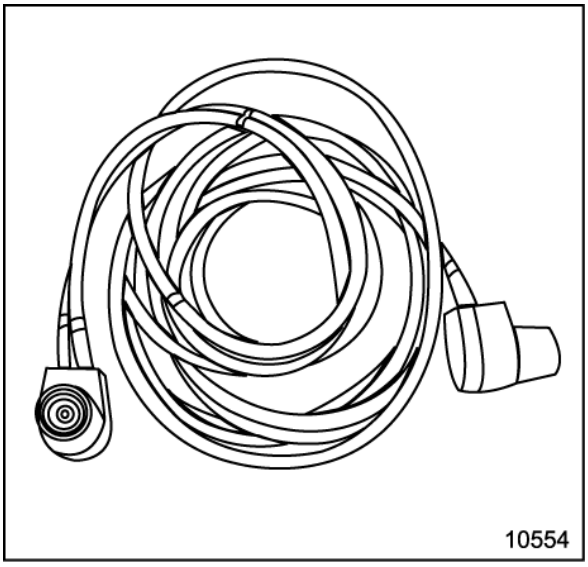


If the battery (or batteries) on the vehicle has run down and the vehicle will not start, you may want to use another vehicle to provide power to start the vehicle.

The NATO term for this system is slave receptacle. In the event the system must be replaced, refer to Slave Receptacle Replacement in Bumpers.

NATO Slave Cables are the only recommended method of jump starting similar vehicles.

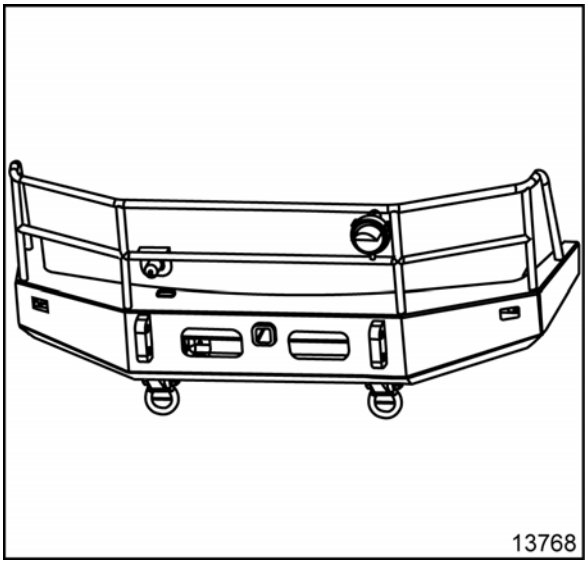
Slave Starting



Caution: Batteries can hurt you. They can be dangerous because they contain acid that can burn you. They contain gas that can explode or ignite. They contain enough electricity to burn you. If you don't follow these steps exactly some or all of these things can hurt you.

Notice: Ignoring these steps could result in costly damage to the vehicle. Trying to start your vehicle by pushing or pulling it won't work and it could damage your vehicle.

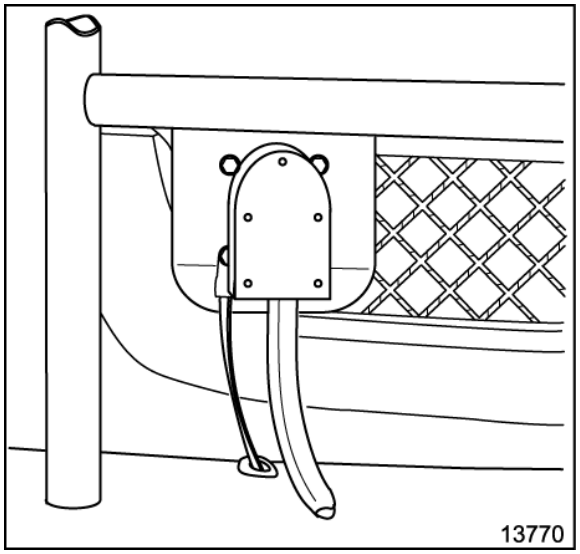
You should always use the slave receptacle and NATO Slave Cable when performing this operation.



1. Position the vehicles close enough so the slave cable can reach, but be sure the vehicles are not touching each other. If they are, it could cause a ground connection. You would not be able to start your vehicle, and the bad grounding could damage the electrical systems. To avoid the possibility of the vehicles rolling, set the parking brake firmly on both vehicles involved in the jump start procedure. Put the automatic transmission in PARK (P). Be sure the transfer case is not in NEUTRAL (N).
2. Turn OFF the ignition on both vehicles. Unplug unnecessary accessories plugged into the cigarette lighter or accessory power outlets. Turn OFF all lamps that aren't needed as well as radios. This will avoid sparks and help save both batteries.
3. Locate the slave receptacles on both vehicles.

Caution: Using an open flame near a battery can cause battery gas to explode. People have been hurt doing this, and some have been blinded. Use a flashlight if you need more light. Be sure the batteries have enough water. You don't need to add water to the Optima battery (or batteries) installed in every vehicle. But if a battery has filler caps, be sure the right amount of fluid is there. If it is low add water to take care of that first. If you don't explosive gas could be present. Don't get it on you. If you accidentally get it in your eyes or on your skin, flush the place with water and get medical help immediately.

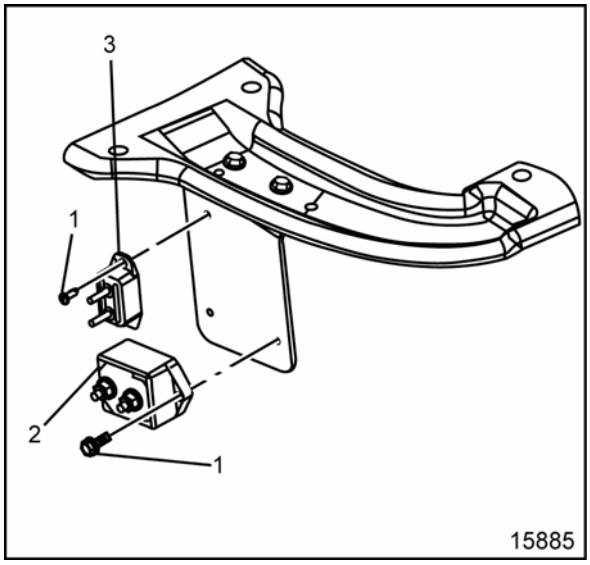
Caution: Fans or other moving engine parts can injure you badly. Keep your hands away from moving parts once the engine is running.



4. Connect the slave cable to the vehicle with the dead battery.
5. Start the vehicle with the good batteries.
6. Connect the slave cable to the vehicle with the good battery.
7. Allow the vehicle with the dead battery to charge for 10 minutes.

Note: It may take up to 30 minutes to charge the battery enough to start the vehicle depending on its state of charge.

8. Start the vehicle with the dead battery.
9. Remove the slave cable in the reverse order that it was installed. Take care not to let the cables touch a metal surface.



Circuit Breaker Replacement – 12V or 24V

Removal Procedure

Caution: Refer to Battery Disconnect Caution in Cautions and Notices.

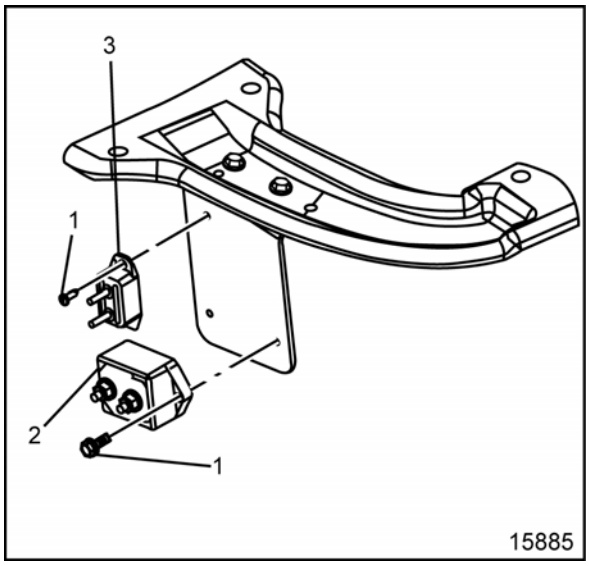
1. Disconnect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure.
2. Remove the nuts holding the wires to the circuit breaker and remove the wires.
   Note the location of wires for reassembly.
3. Remove the 2 bolts (1), holding the 12V (2) or 24V (3) circuit breaker to the fender support.
4. Remove the 12V (2) or 24V (3) circuit breaker.

Installation Procedure

1. Install the 12V (2) or 24V (3) circuit breaker to the fender support with the 2 bolts (1).

Note: Install 24V circuit breaker with auxiliary contact up.

2. Install the wires to the circuit breaker with the two nuts.
3. Connect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure.

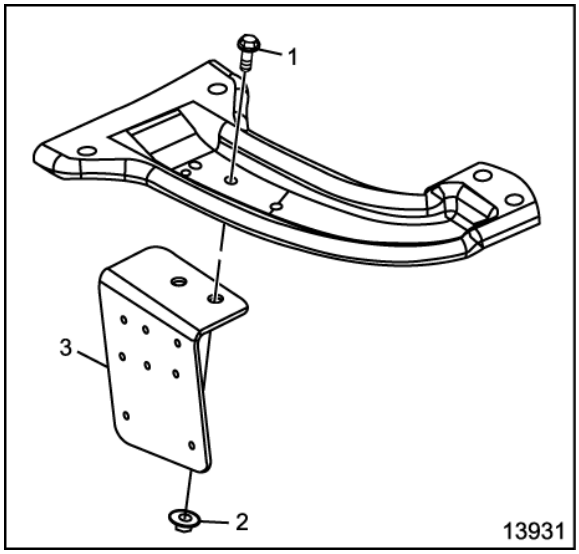


Circuit Breaker Bracket Replacement

Removal Procedure

Caution: Refer to Battery Disconnect Caution in Cautions and Notices.

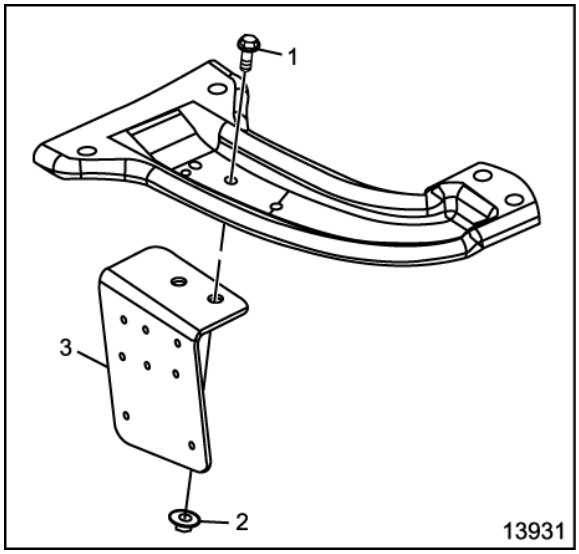
1. Disconnect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure.
2. Remove the circuit breakers. Refer to Circuit Breaker Replacement – 12V or 24V.
3. Remove the retainers (1, 2) attaching the bracket (3) to the fender/cowl support.

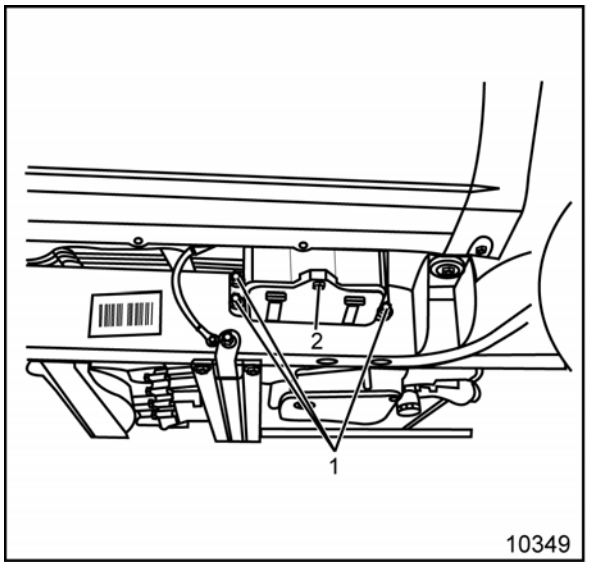


Installation Procedure

Notice: Refer to Fastener Notice in Cautions and Notices.

1. Install the bracket (3) to the fender/cowl support and tighten the retainers (1, 2).
   Tighten
   Tighten bracket bolts to 6 N•m (53 lb in).
2. Install the circuit breakers. Refer to Circuit Breaker Replacement – 12V or 24V.
3. Connect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure.





Battery Tray/Battery Replacement

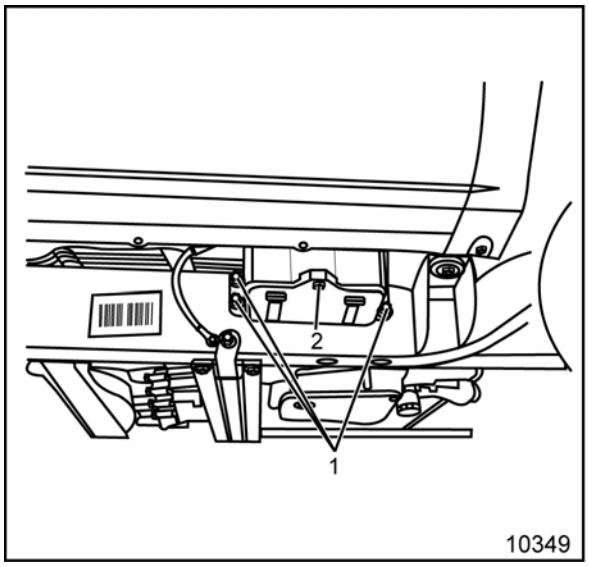
Removal Procedure

Caution: Refer to Battery Disconnect Caution in Cautions and Notices.

1. Disconnect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure.
2. Loosen the bolts (1). Push up the battery tray (2) and remove from frame.

Caution: Do not let the battery posts touch the frame.

3. Unsnap the positive battery cable cover.
4. Remove the negative and positive battery cables.
5. Remove the retainer bolt and remove battery.



Installation Procedure

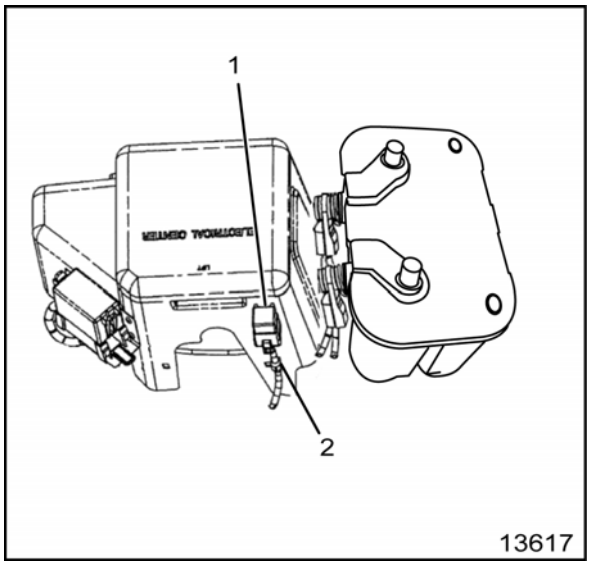
1. Install the battery in tray.

Notice: Refer to Fastener Notice in Cautions and Notices.

2. Install the battery retainer and tighten bolt.
   Tighten
   Tighten retainer bolt to 25 N•m (18 lb ft).
3. Install the positive and negative cables and tighten.
   Tighten
   Tighten cables to 17 N•m (13 lb ft).

Caution: Do not let the battery posts touch the frame.

4. Snap the positive battery cable cover closed.
5. Lift the battery tray (2) onto the bolts (1) on the frame and tighten.
6. Connect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure.

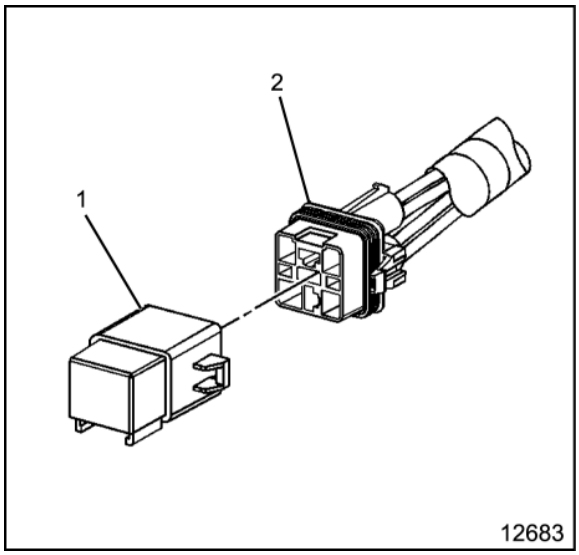


Relay Replacement – 24V Generator

Removal Procedure

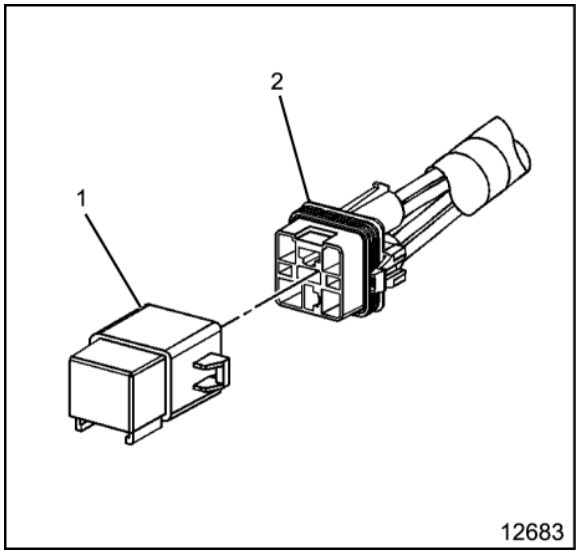
1. Release the clip (2) securing the wiring harness to the underhood electrical center housing.
2. Remove the 24V relay (1) from the underhood electrical center housing.

3. Remove the connector position assurance (CPA) devices or secondary locks.
4. Separate the relay (1) from the wiring harness connector (2).

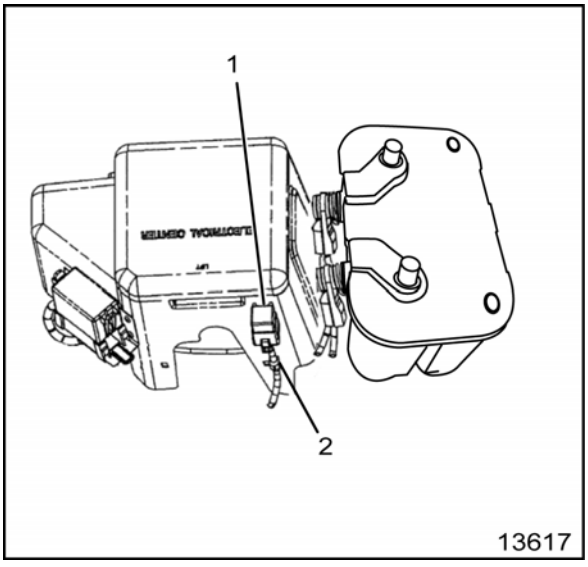


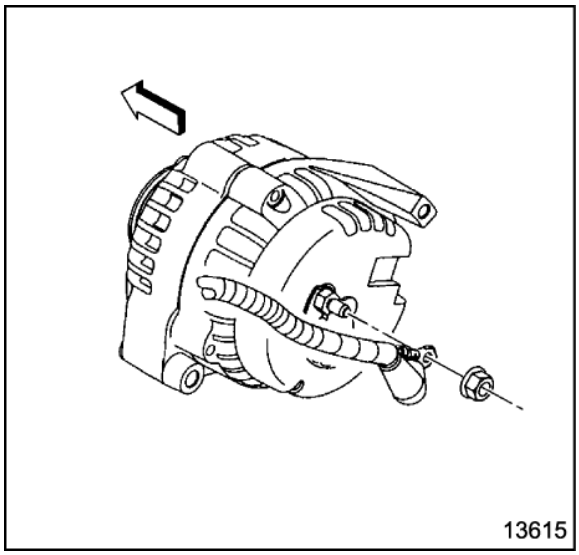
Installation Procedure

1. Connect the relay (1) to the wiring harness connector (2).
2. Install any connector position assurance (CPA) devices or secondary locks.



3. Install the 24V relay (1) onto the underhood junction block.
4. Secure the wiring harness to the clip (2).



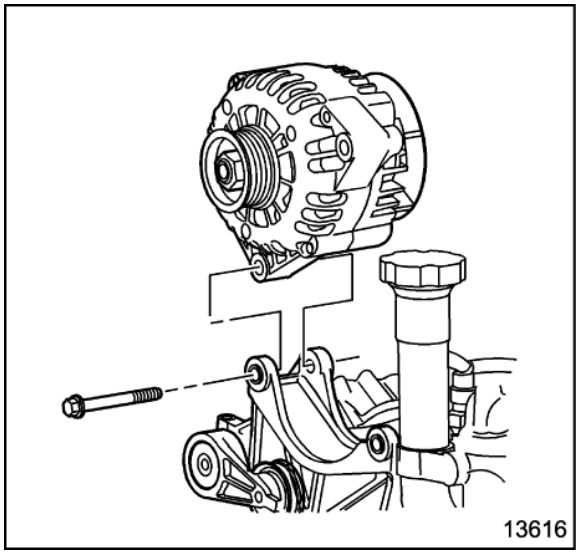


24V Generator Replacement

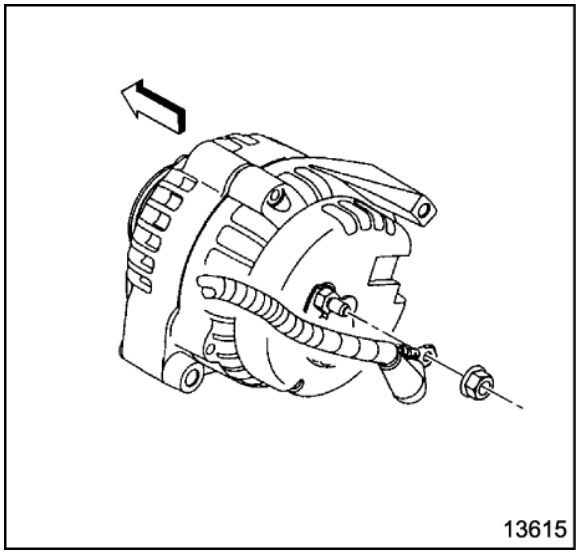
Removal Procedure

Caution: Refer to Battery Disconnect Caution in Cautions and Notices.

1. Disconnect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure.
2. Remove the drive belt. Refer to Drive Belt Replacement in Engine Mechanical – 6.6L in the 2004 C/K Truck Service Manual.
3. Disconnect the generator electrical connector.
4. Remove the cable from the output stud.



5. Remove the generator bolts.
6. Remove the generator from the vehicle.



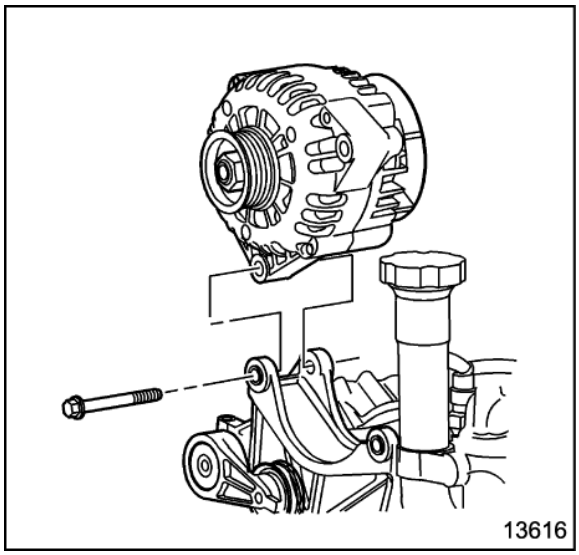
Installation Procedure

1. Install the cable onto the output stud of the generator.

Notice: Refer to Fastener Notice in Cautions and Notices.

2. Install the nut onto the output stud.
   Tighten
   Tighten output stud to 9 N•m (80 lb in).

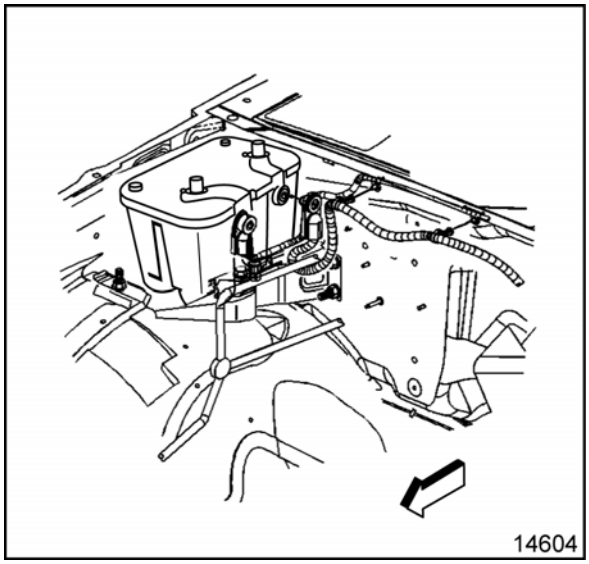
3. Install the generator into the mounting bracket.
4. Install the generator bolts.
   Tighten
   Tighten generator bolts to 50 N•m (37 lb ft).
5. Connect the generator electrical connector.
6. Install the drive belt. Refer to Drive Belt Replacement in Engine Mechanical – 6.6L in the 2004 C/K Truck Service Manual.
7. Connect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure.



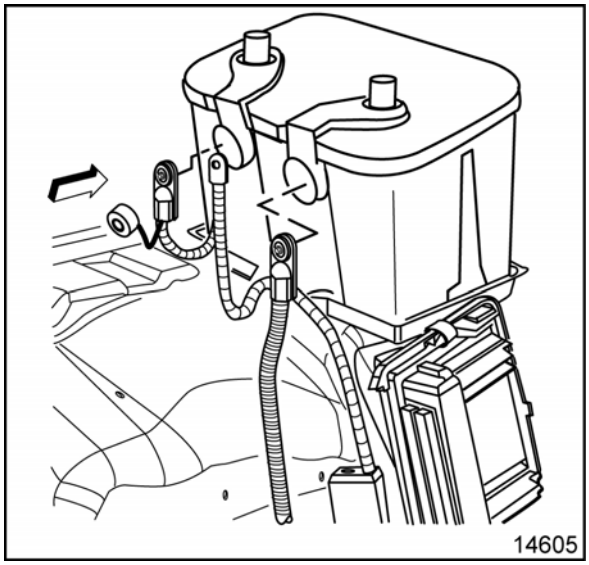
Battery Cable Disconnect/Connect Procedure

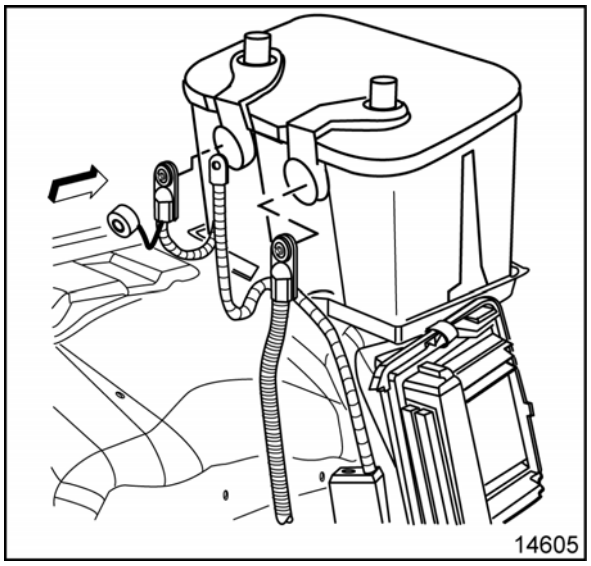
Removal Procedure

1. Turn OFF all the lamps and accessories.
2. Turn OFF the ignition.
3. Remove the negative cable from the frame mounted battery (Pickup only).
4. Remove the battery negative cable from the right underhood battery.



5. Remove the negative cable of the 24V battery.
6. Remove the positive cable of the 24V battery.





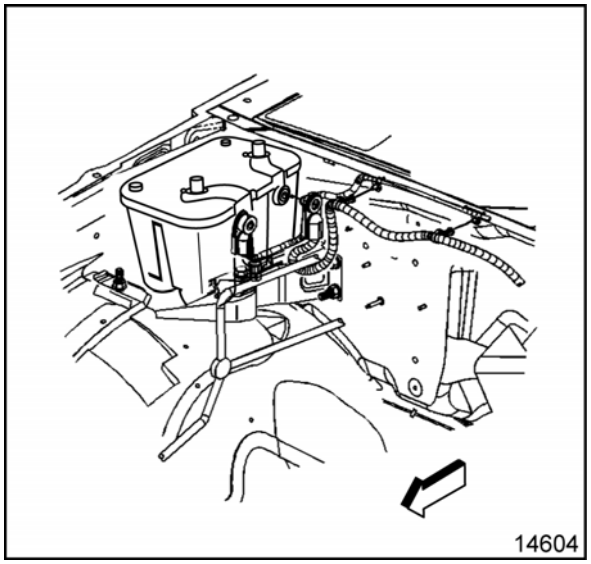
Installation Procedure

Caution: Refer to Battery Disconnect Caution in Cautions and Notices.

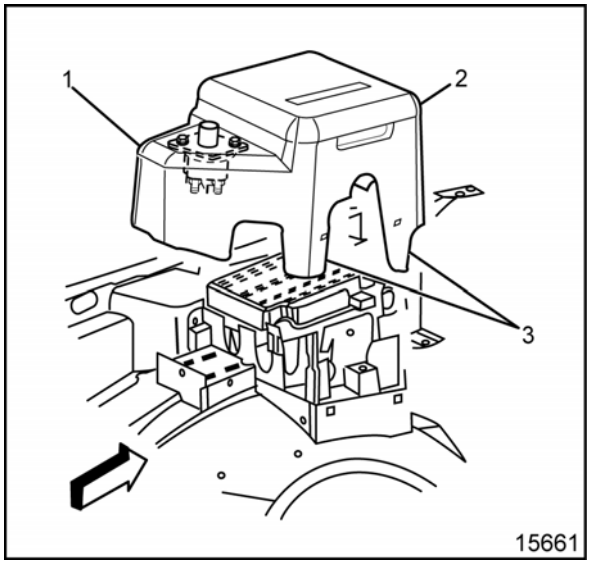
Notice: Refer to Fastener Notice in Cautions and Notices

Important: Clean any existing corrosion from the battery terminal bolt flange and the battery cable end.

1. Install the positive cable to the 24V battery.
2. Install the battery ground negative cable to the 24V battery.
   Tighten
   Tighten the bolt to 17 N•m (13 lb ft).
3. Install the negative battery cable to the right underhood battery.
   Tighten
   Tighten the bolt to 17 N•m (13 lb ft).



4. Install the negative cable of the frame mounted battery (Pickup only).
   Tighten
   Tighten the bolt to 17 N•m (13 lb ft).



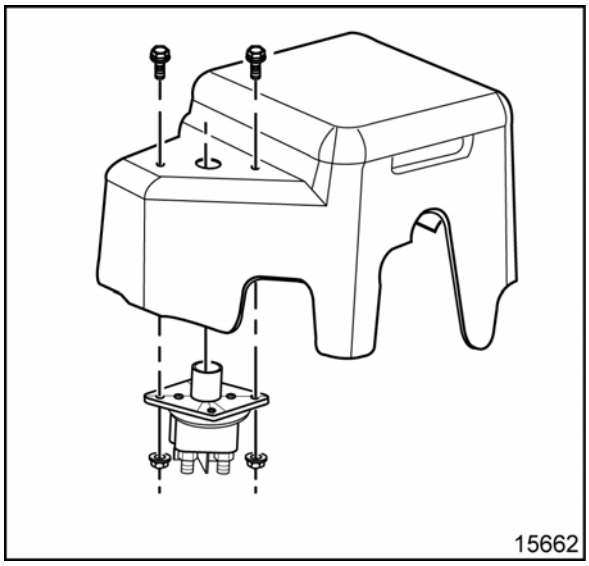
Vehicle Load Disconnect Switch Replacement

Removal Procedure

Caution: Refer to Battery Disconnect Caution in Caution and Notices.

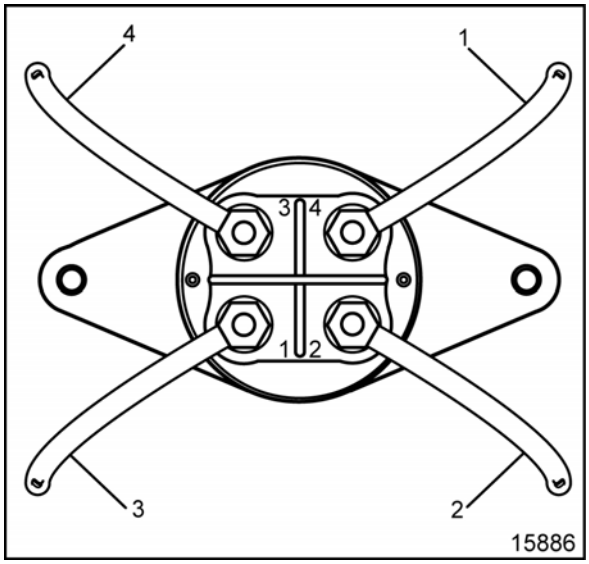
1. Disconnect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure.
2. Remove the disconnect switch key and the left upper brace.
3. Remove the electrical center cover assembly (1) by lifting the cover outwards to clear the tabs (3).

4. Remove the switch mounting nuts and bolts.
5. Remove the nuts holding the 24V and 12V cables to the switch and remove the cables.
   Note location of cables removed for assembly.



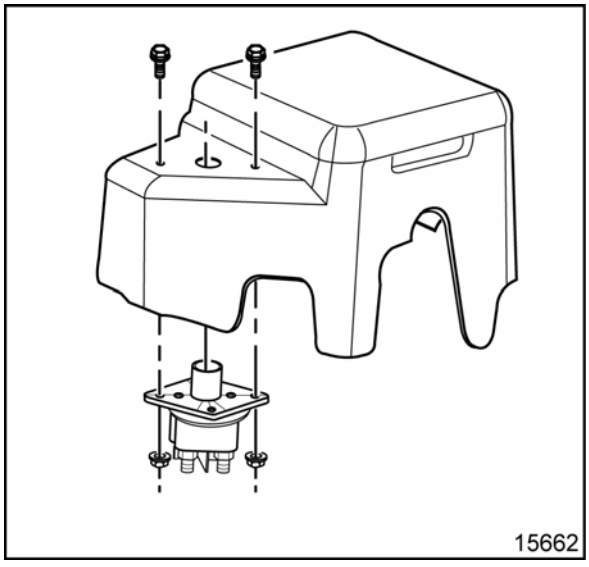
Installation Procedure

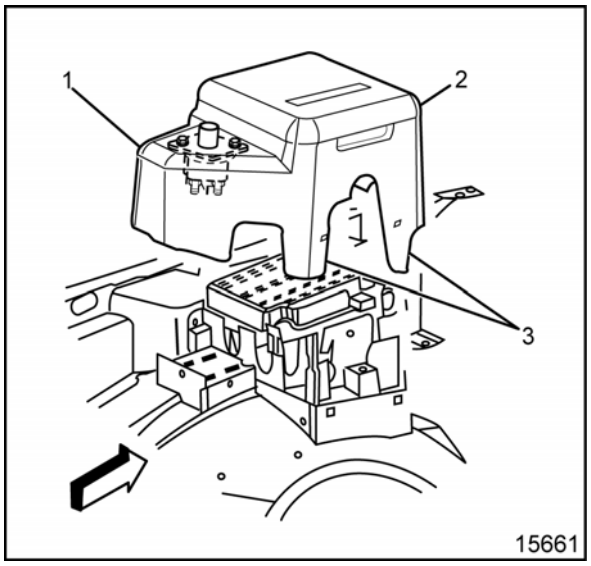
1. Install the 24V and 12V cables to the switch.
   Red cable from 24V battery positive (1) to terminal 4.
   Red/black cable (4) from 24V generator to terminal 3.
   Red cable (3) from UBEC to terminal 1.
   Red cable (2) from 24V battery negative to terminal 2.



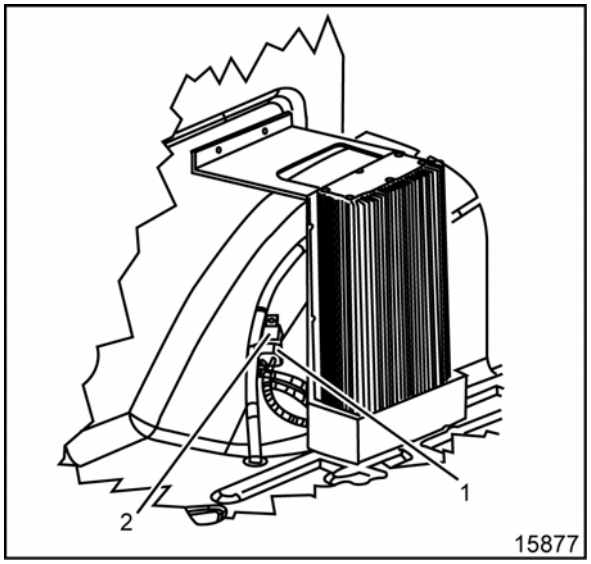
Notice: Refer to Fastener Notice in Caution and Notices.

2. Install the switch to the underhood electrical center cover.
   Tighten
   Tighten the switch mounting nuts to 9 N•m (80 lb in).





3. Set the electrical center cover assembly in its resting position until the tabs (3) lock into place.
4. Install the fender upper brace and the disconnect switch key.
5. Connect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure.

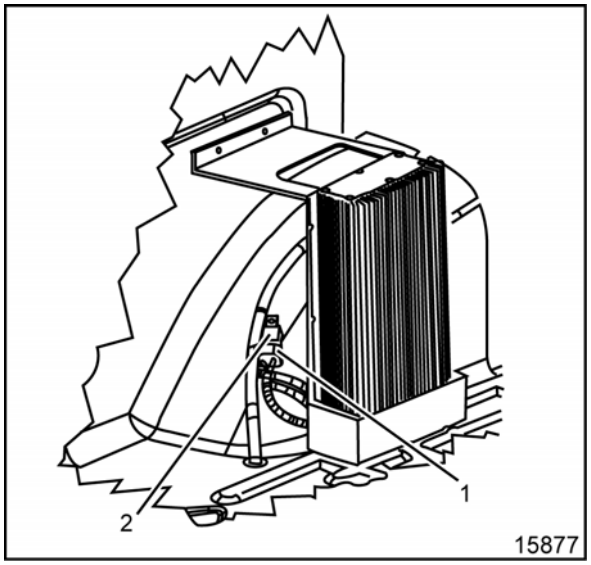


24 Voltmeter Relay Replacement (Utility)

Removal Procedure

Caution: Refer to Battery Disconnect Caution in Cautions and Notices.

1. Remove the negative cable of the right battery and the 12V and 24V cable of the left battery.
2. Remove the cover from the trim panel.
3. Remove the relay (2) from the connector (1).



Installation Procedure

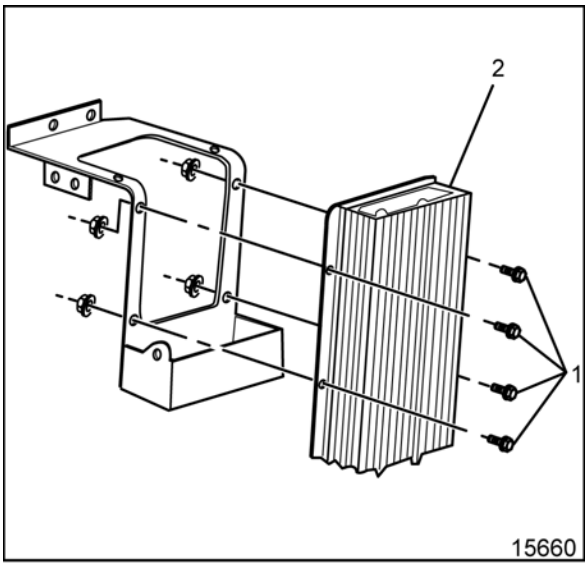
1. Install the relay (2) into the connector (1).
2. Install the cover onto the trim panel.
3. Connect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure.

Power Converter Replacement (Utility)

Removal Procedure

***Caution: Refer to Battery Disconnect Caution in Cautions and Notices*.**

1. Disconnect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure.
2. Remove bolts (1) securing converter to the bracket.
3. Lift converter (2) out of bracket enough to gain access to the wiring connections.
4. Remove the wiring from the connectors. Note removal position of wiring for installation.



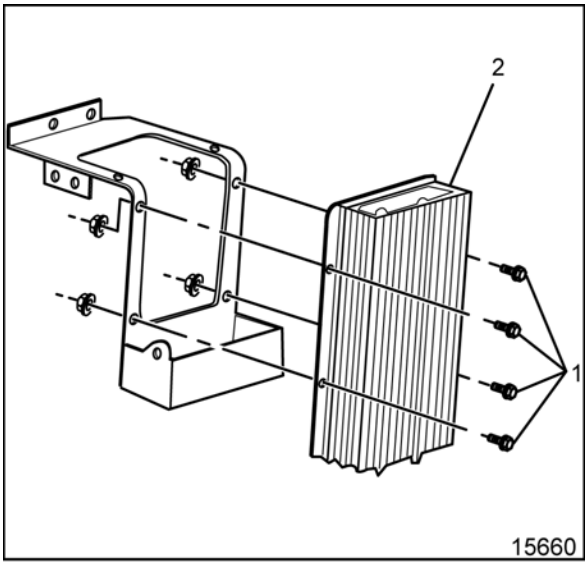
Installation Procedure

Notice: Refer to Fastener Notice in Cautions and Notices.

1. Install wiring to the converter connection in the same position as removed and tighten.
   Tighten
   Tighten converter connections to 12 N•m (110 lb in).
2. Install converter (2) in bracket and tighten bolts (1).
   Tighten
   Tighten converter bolts to 6-10 N•m (53-89 lb in).

Important: Verify that the wiring is not pinched and that the converter terminals are not touching the metal bracket.

3. Connect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure.

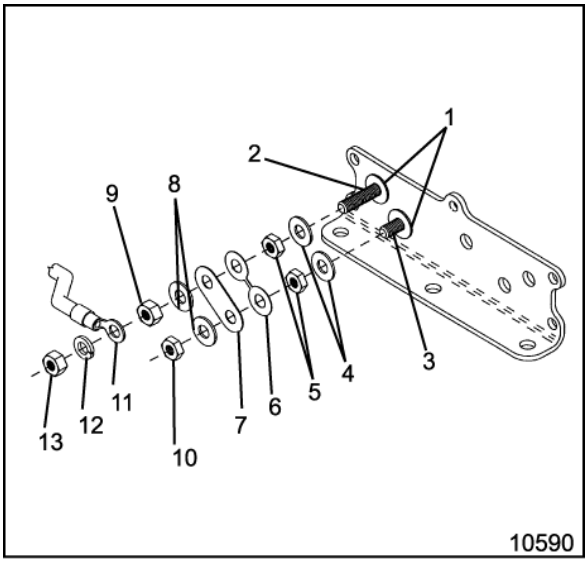


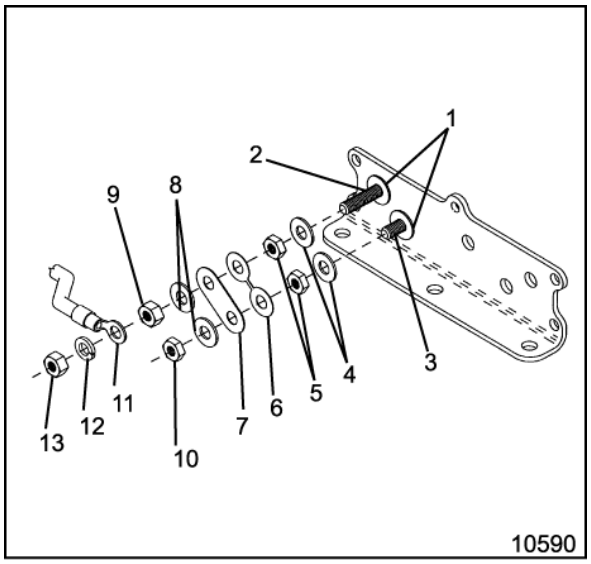
24V Converter Fuse Replacement

Removal Procedure

Caution: Refer to Battery Disconnect Caution in Cautions and Notices.

1. Disconnect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure.
2. Remove the nuts, wires and fuse hardware from the fuse link studs. Leave nylon shoulder washers (1) on the studs. Note removal of wiring for installation.
3. Clean stud threads with steel wool or a wire brush. Clean the contact surface of the inside jam nuts (5).
4. Disconnect fuse link (6) and discard.





Installation Procedure

1. Install the flat washers (4) over the nylon shoulder washers (1).
2. Install the inside jam nuts (5) as follows: with a wrench tighten and loosen each nut a few times to clean the threads. From a finger tight position, loosen the jam nuts about a ¼ turn.

Notice: Refer to Fastener Notice in Cautions and Notices.

Note: Do not tighten the inside jam nuts.

3. Install the fuse link (6), fuse cover (7), flat washers (8) and the fuse retaining nuts (9) and (10) full height nut (9) on long stud (2) and jam nut (10) on short stud (3).
   Tighten
   Tighten fuse retaining nuts to 12 N•m (110 lb in).
4. Install the wiring (11) in the same location as removed.
5. Install the lock washer (12) and the full height nut (13) on the long stud (2) and tighten.
   Tighten
   Tighten nut to 12 N•m (110 lb in).
6. Connect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure.

Description and Operation

Battery Description (12V and 24V)

The engine electrical options include the slave receptacle, battery equalizer or 24V generator, and a two or three-battery power system.

The two batteries in series provide 24V of power, which is isolated by the power equalizer and controlled by the circuit breakers. These step the power down from 24V to 12V. Greater power is needed for the higher load used by optional radio communications, or for compatibility with other slave receptacles on other vehicles.

Refer to in the 2004 C/K Truck Service Manual for further details. Refer to replacement procedures in this manual for repairs on various electrical components.

Maintenance

The 24V power system makes each vehicle capable of accepting a power boost through its slave receptacle from any vehicle similarly equipped. This 24V system requires specific maintenance.

Note: Repairs in this manual are limited to the specific military equipment included in the LSSV options most commonly ordered.

Charging System Description and Operation

Charging

Pickup

The LSSV pickup vehicles are equipped with a 24V generator. The 24V generator's electronics are isolated from the chassis ground. The 24V configuration provides sufficient capacity and reserve for 24V loads. Electrical loads can be connected indefinitely while the engine is running, and for a limited time when engine is OFF. The 24V battery must be above 7 volts in order for the generator to turn ON. The generator features permanently lubricated bearings. Service should only include the tightening of mounting components. Otherwise the generator is replaced as a complete unit.

Utility

The LSSV utility vehicles are equipped with a DC to DC power converter. The primary function of the power converter is used to obtain 24 volts in a predominately 12V system. The power converter can deliver up to 100 amps of continuous, clean 24V current for practically any 24V load, such as two-way radios, navigations blackout (B/O) lighting and other military options.

Caution: 24V loads drawing current in excess of the rating of the Converter are permissible for short periods of time (minutes) only. Prolonged use of these loads will result in improper battery charge and eventual battery deterioration, and possible damage to the converter.

DO NOT WELD ON VEHICLES EQUIPPED WITH CONVERTER SYSTEM. PERMANENT DAMAGE MAY RESULT TO THE CONVERTER SYSTEM. REMOVE ALL CONVERTER FUSES BEFORE WELDING.

24V Voltmeter

A voltmeter is installed to monitor the status of the 24V battery and the 24V generator (pickup) or the power converter (utility).

Pickup

Voltage is available through circuit 8008 (BRN) of the 24V 10A fuse. When the vehicle load disconnect switch is placed in the ON position, voltage is applied to the 24V fuse that provides voltage to the voltmeter. The voltmeter is grounded at G200 through the I/P relay block.

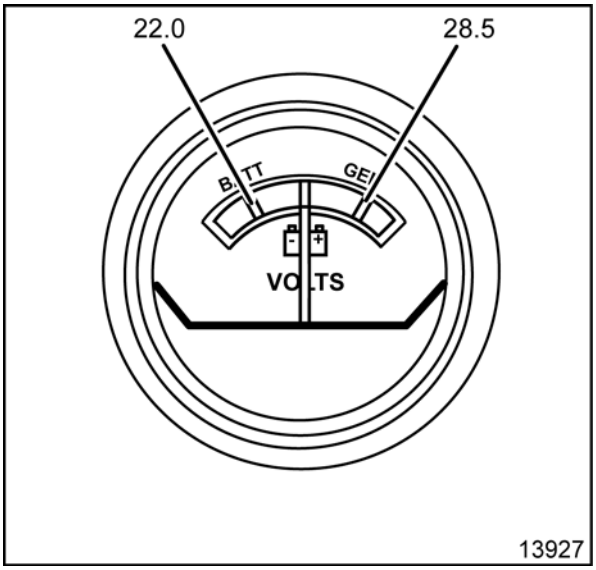
Utility

Voltage is available through circuit 901 (ORN) wire of the voltmeter relay. When the ignition switch is placed in the ON position, voltage is applied to the power converter 24V regulator that provides voltage to the voltmeter relay. The voltmeter is grounded at G200 through the I/P relay block.

Color graduations as viewed from the front of the meter from left to right are as follows:

- Minimum voltage to activate the pointer 18.0-volts
- Red/Yellow Break Point 22.0-volts
- Yellow/Green Break Point 26.0-volts
- Small Hack Mark (in green) 28.5-volts

In a no load situation, with the engine OFF, the gage needle should be mid-way between the red band and green band, in the yellow band. If the gage needle is in the lower end of the yellow band, this is unacceptable, and the battery may be weak.



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Wiring Systems

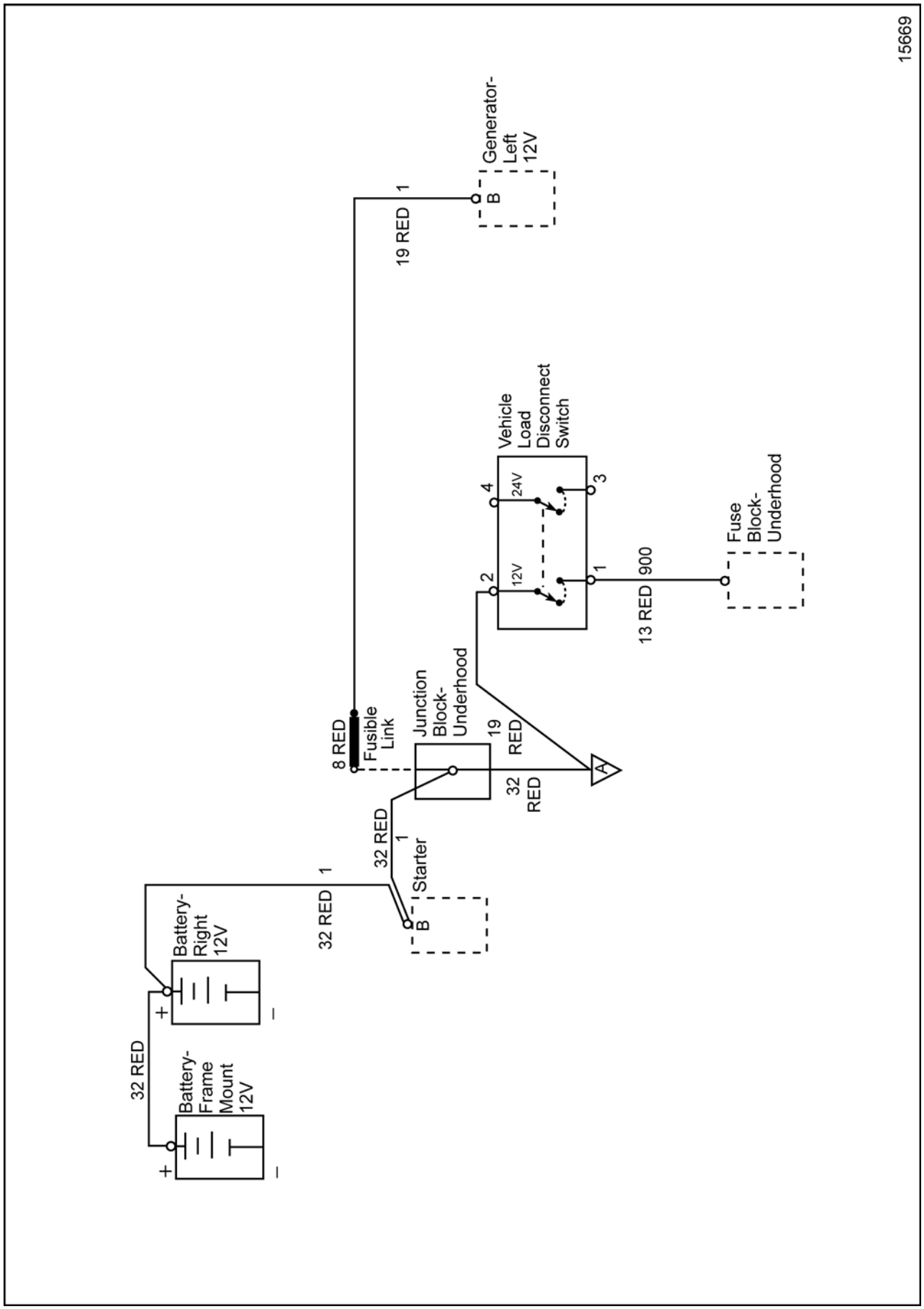
Specifications

Fastener Tightening Specifications

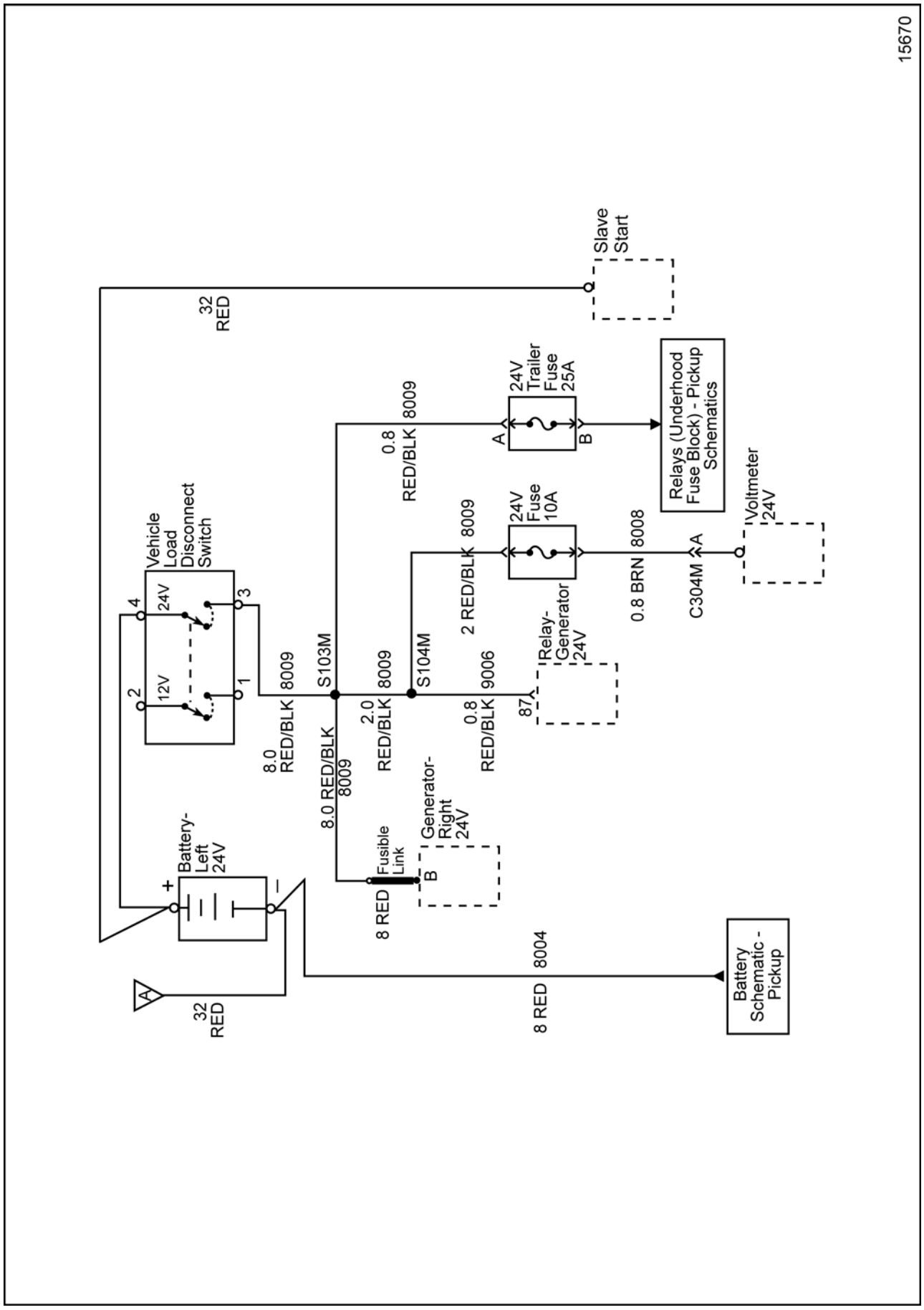
Application	Specification	
	Metric	English
Fender Brace Bolts	25 N•m	18 lb ft
Front Winch Ground Cable Bolt	34 N•m	25 lb ft
Junction Block Nut	9 N•m	80 lb in
Trailer Connector Bolts	5 N•m	44 lb in
Winch Connector Bolt	5-8 N•m	44-71 lb in
Winch Harness Clamp Bolt	18-29 N•m	13-21 lb ft

Schematic and Routing Diagrams

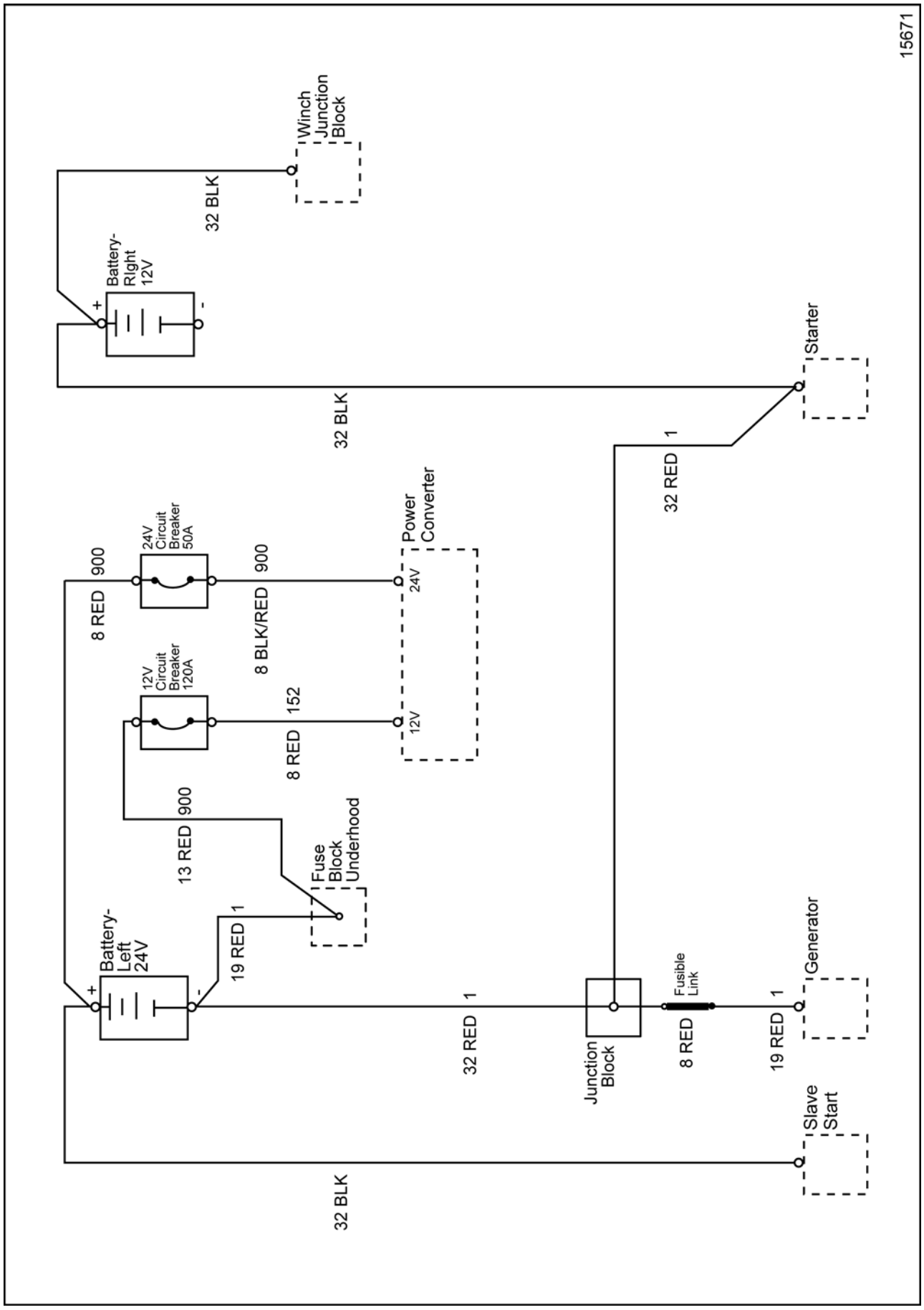
Power Distribution Schematics
Power Distribution 12V – Pickup



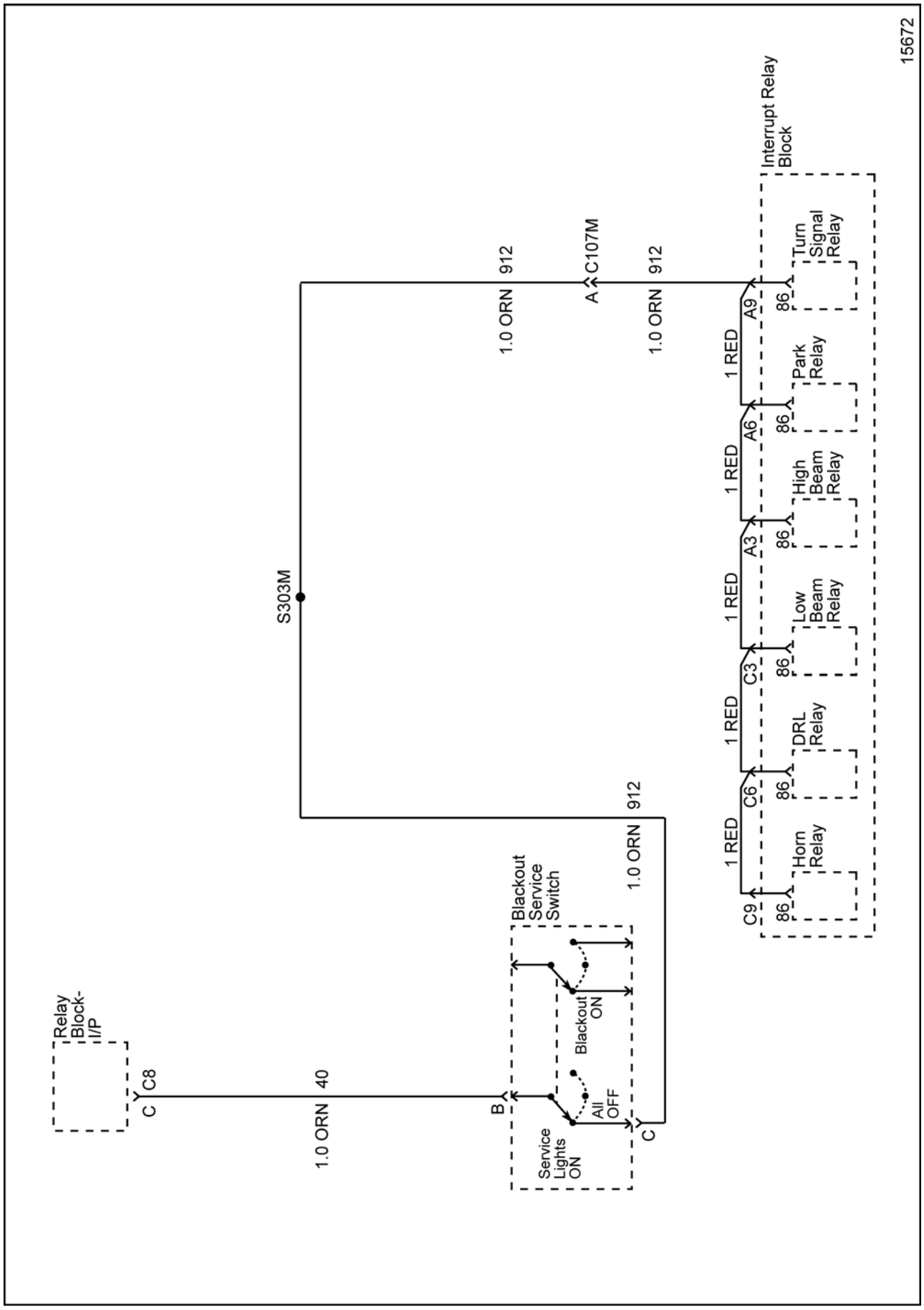
Power Distribution 24V – Pickup



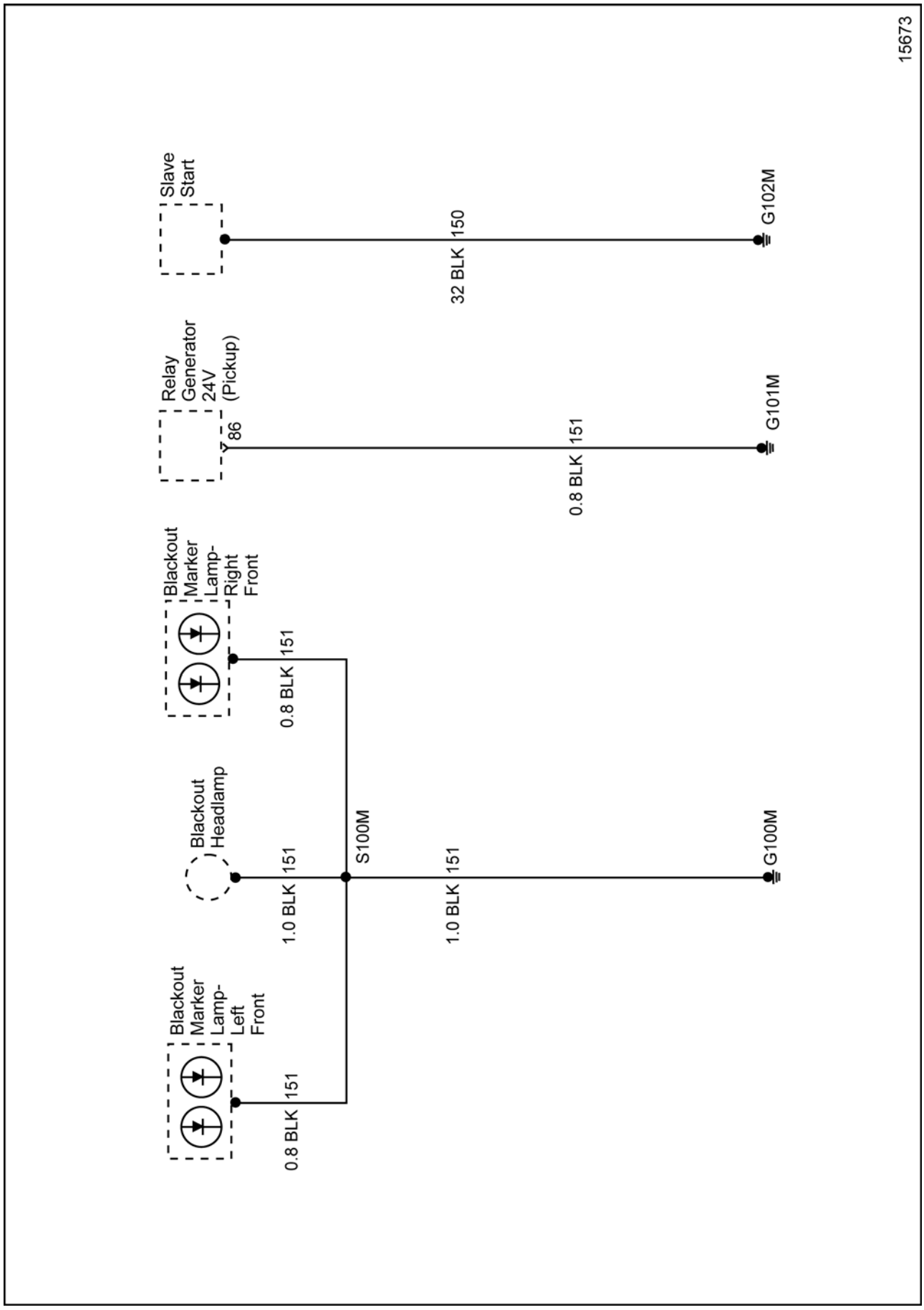
Power Distribution 12V/24V – Utility



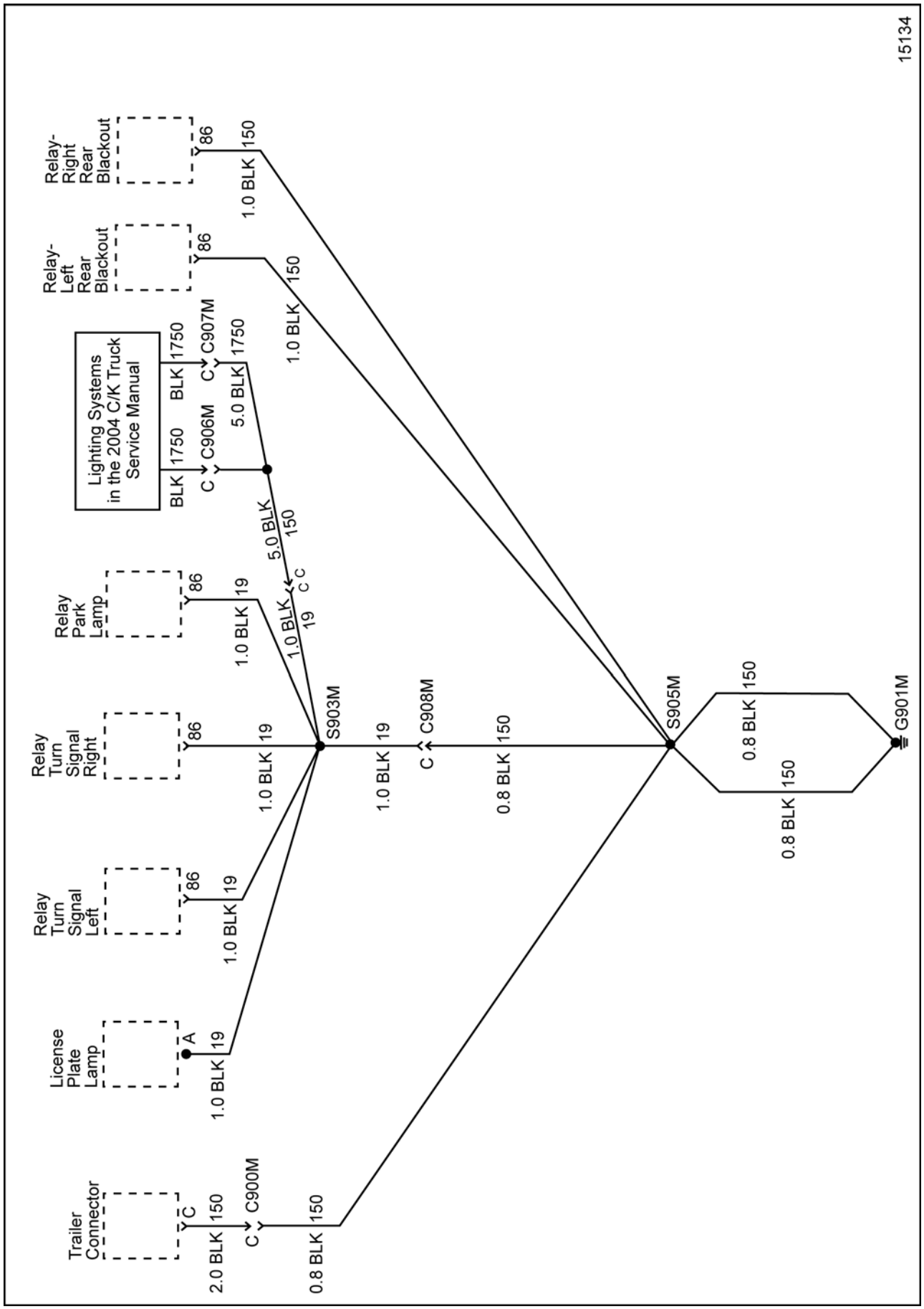
Power Distribution Relay Block



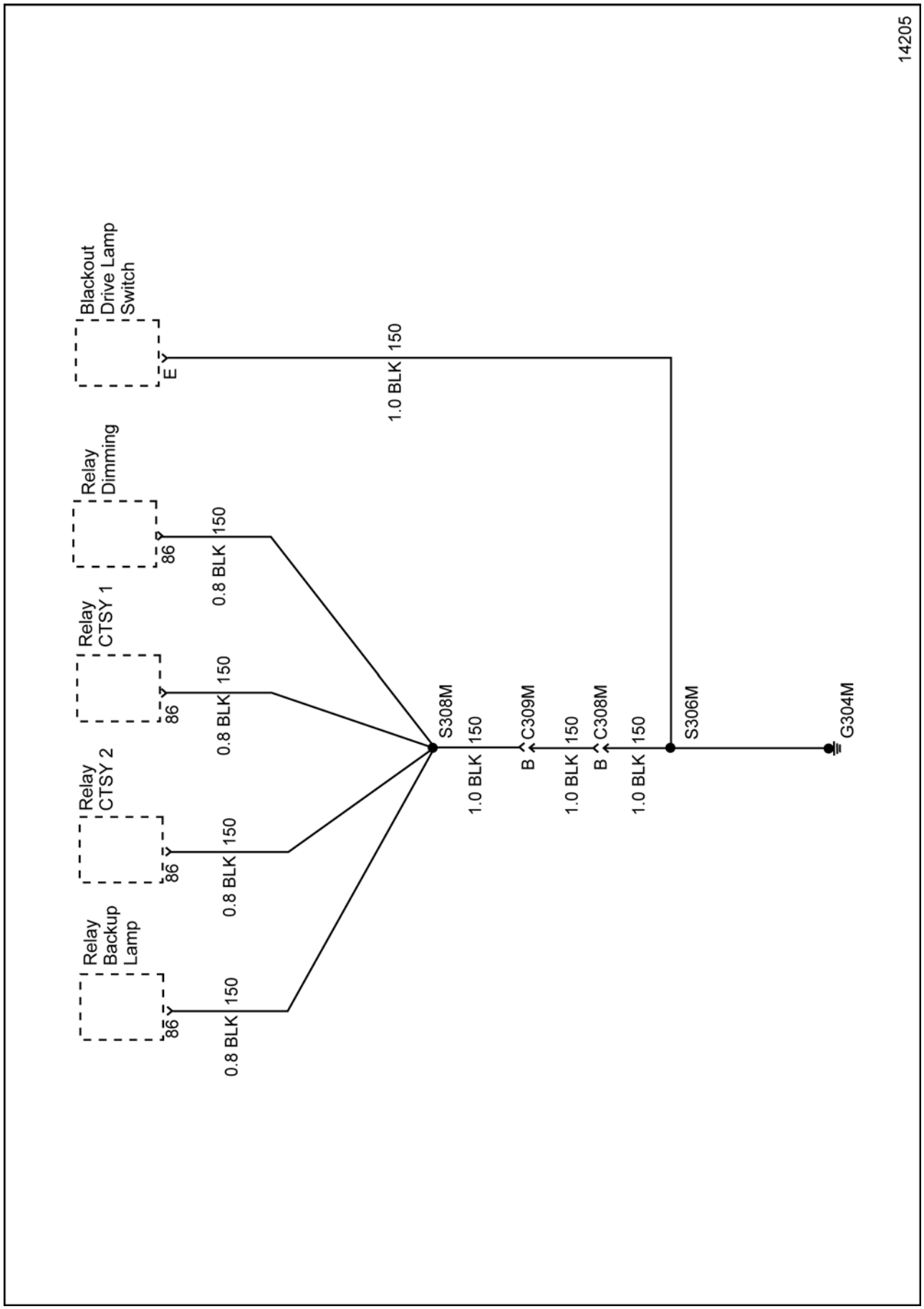
Ground Distribution
Ground Distribution (G100M, G101M, G102M)



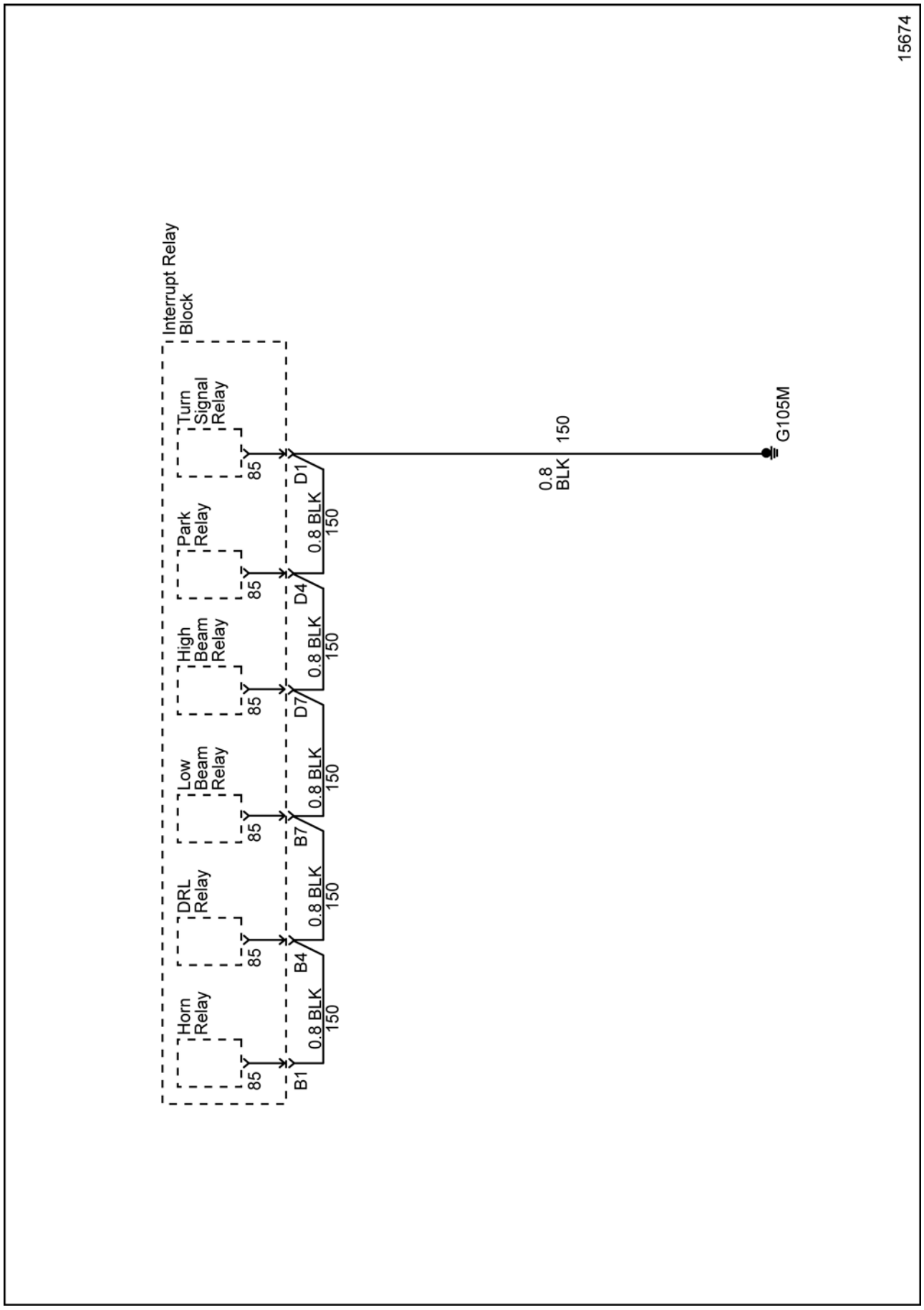
Ground Distribution (G901M)



Ground Distribution (G304M)



Ground Distribution Relay Block (G105M)



Component Locator

Master Electrical Component List

Name	Location	Locator View	Connector End View
24V Slave Receptacle Assembly	On the right side of the bumper brush guard	Engine Electrical Component Views in Engine Electrical	___
24 Voltmeter Lamp	Mounted in the accessory panel on the lower center of the I/P	Engine Electrical Component Views in Engine Electrical	Engine Electrical Connector End Views in Engine Electrical
Backup Lamp Relay	Inline on the interrupt harness under the I/P	___	___
Blackout (B/O) Drive Relay	Inline on the auxiliary I/P harness	Engine Electrical Component Views in Engine Electrical	Lighting Systems Connector End Views in Lighting Systems
Blackout (B/O) Headlamp	On the left side of the bumper brush guard	Lighting Systems Component Views in Lighting Systems	Lighting Systems Connector End Views in Lighting Systems
Blackout (B/O) Marker Lamp, LF	In the left side of the front bumper	Lighting Systems Component Views in Lighting Systems	Lighting Systems Connector End Views in Lighting Systems
Blackout (B/O) Marker Lamp, RF	In the right side of the front bumper	Lighting Systems Component Views in Lighting Systems	Lighting Systems Connector End Views in Lighting Systems
Blackout (B/O) Service Switch	In the accessory panel on center lower I/P next to the 24V meter	Lighting Systems Component Views in Lighting Systems	Lighting Systems Connector End Views in Lighting Systems
Blackout (B/O) Stop/Marker Lamp, LR	In the left side of the rear bumper	Lighting Systems Component Views in Lighting Systems	Lighting Systems Connector End Views in Lighting Systems
Blackout (B/O) Stop/Marker Lamp, RR	In the right side of the rear bumper	Lighting Systems Component Views in Lighting Systems	Lighting Systems Connector End Views in Lighting Systems
Blackout (B/O) Drive Lamp Switch (Headlamp)	In the accessory panel on the center lower I/P next to the 24V meter	Engine Electrical Component Views in Engine Electrical	Lighting Systems Connector End Views in Lighting Systems
Battery – 12V	Outside of frame rail under passenger seat (Diesel Only)	___	___
Battery – 12V	At the right rear engine compartment	___	___
Battery – 24V	At the left front of the engine compartment	___	___
Circuit Breaker-12V	In the engine compartment, on the left fender brace (Utility)	Engine Electrical Component Views in Engine Electrical	___
Circuit Breaker-24V	In the engine compartment, on the left fender brace (Utility)	Engine Electrical Component Views in Engine Electrical	___
CTSY 1 and 2 Relay	Inline on the interrupt harness under the I/P	___	___

Master Electrical Component List (cont'd)

Name	Location	Locator View	Connector End View
DRL Interrupt Relay	Interrupt relay block RH engine compartment	Lighting Systems Component Views in Lighting Systems	___
Generator – 24V	The right front of engine	___	___
Generator Relay – 24V	On the cover of the Underhood fuse block	___	Engine Electrical Connector End Views in Engine Electrical
Generator Fuses – 24V	In the engine compartment inline with the 24V generator harness	___	Engine Electrical Connector End Views in Engine Electrical
Headlamp Hi and Low Beam Interrupt Relay	Interrupt relay block RH engine compartment	Engine Electrical Component Views in Engine Electrical	___
Horn Interrupt Relay	Interrupt relay block RH engine compartment	Engine Electrical Component Views in Engine Electrical	___
Interrupt Relay Block	RH of engine compartment on the underhood fuse block	Engine Electrical Component Views in Engine Electrical	___
Junction Block	Left of RH battery mounted on the bulkhead	Engine Electrical Component Views in Engine Electrical	___
Park Lamp Interrupt Relay	Interrupt relay block RH engine compartment	Engine Electrical Component Views in Engine Electrical	___
Power Converter	Rear body panel, behind the seat (Utility)	Engine Electrical Component Views in Engine Electrical	___
Trailer Harness Connector 12 Pin	Near the center of the rear bumper	Lighting Systems Component Views in Lighting Systems	Lighting Systems Connector End Views in Lighting Systems
Turn Signal Interrupt Relay	Interrupt relay block RH engine compartment	Lighting Systems Component Views in Lighting Systems	___
C100M (1 Cavity)	Front left of the front bumper for left front blackout (B/O) marker	Power and Grounding Component Views	Inline Harness Connector End Views
C101M (1 Cavity)	Front right of the front bumper for right front blackout (B/O) marker	Power and Grounding Component Views	Inline Harness Connector End Views
C102M (1 Cavity)	Front left center of grille for blackout (B/O) headlamp	Power and Grounding Component Views	Inline Harness Connector End Views
C103M (2 Cavities)	Left side of engine compartment for front lighting harness	___	Inline Harness Connector End Views
C105M (4 Cavities)	Engine compartment by Underhood fuse block	___	Inline Harness Connector End Views
C106M (3 Cavities)	Engine compartment by Underhood fuse block	___	Inline Harness Connector End Views

Master Electrical Component List (cont'd)

Name	Location	Locator View	Connector End View
C107M (1 Cavity)	Engine compartment by Underhood fuse block	—	Inline Harness Connector End Views
C108M (2 Cavities)	Left rear frame rail towards rear of the vehicle	—	Inline Harness Connector End Views
C301M (2 Cavities)	Under I/P for topper lamp	—	Inline Harness Connector End Views
C302M (2 Cavities)	Under I/P for brake lamps	—	Inline Harness Connector End Views
C303M (1 Cavity)	Relay block – I/P C4, Cavity E	—	Inline Harness Connector End Views
C304M (2 Cavities)	Blackout (B/O) panel for voltmeter	—	Inline Harness Connector End Views
C305M (2 Cavities)	Under I/P for CTSY interrupt	—	Inline Harness Connector End Views
C306M (1 Cavity)	Under I/P for backup lamps	—	Inline Harness Connector End Views
C307M (7 Cavities)	Under I/P Dimming Relay	—	Inline Harness Connector End Views
C308M (2 Cavities)	Under I/P for blackout (B/O) switch	—	Inline Harness Connector End Views
C900M (3 Cavities)	Rear bumper for trailer connector	Power and Grounding Component Views	Inline Harness Connector End Views
C901M (3 Cavities)	Rear bumper for trailer connector	Power and Grounding Component Views	Inline Harness Connector End Views
C902M (2 Cavities)	Rear bumper for right blackout (B/O) marker	Power and Grounding Component Views	Inline Harness Connector End Views
C903M (2 Cavities)	Rear bumper for left blackout (B/O) marker	Power and Grounding Component Views	Inline Harness Connector End Views
C904M (2 Cavities)	Right rear behind taillamp	—	Inline Harness Connector End Views
C905M (4 Cavities)	Rear of vehicle for trailer connector	—	Inline Harness Connector End Views
C906M (4 Cavities)	Rear of vehicle for trailer connector	—	Inline Harness Connector End Views
C907M (4 Cavities)	Rear of vehicle for trailer connector	—	Inline Harness Connector End Views
C908M (4 Cavities)	Rear of vehicle for trailer connector	—	Inline Harness Connector End Views
C909M (1 Cavity)	Rear bumper for blackout (B/O) relay	—	Inline Harness Connector End Views
C910M (1 Cavity) (Utility)	Rear bumper for license lamp	—	Inline Harness Connector End Views
C911M	Rear bumper for trailer connector	—	—

Master Electrical Component List (cont'd)

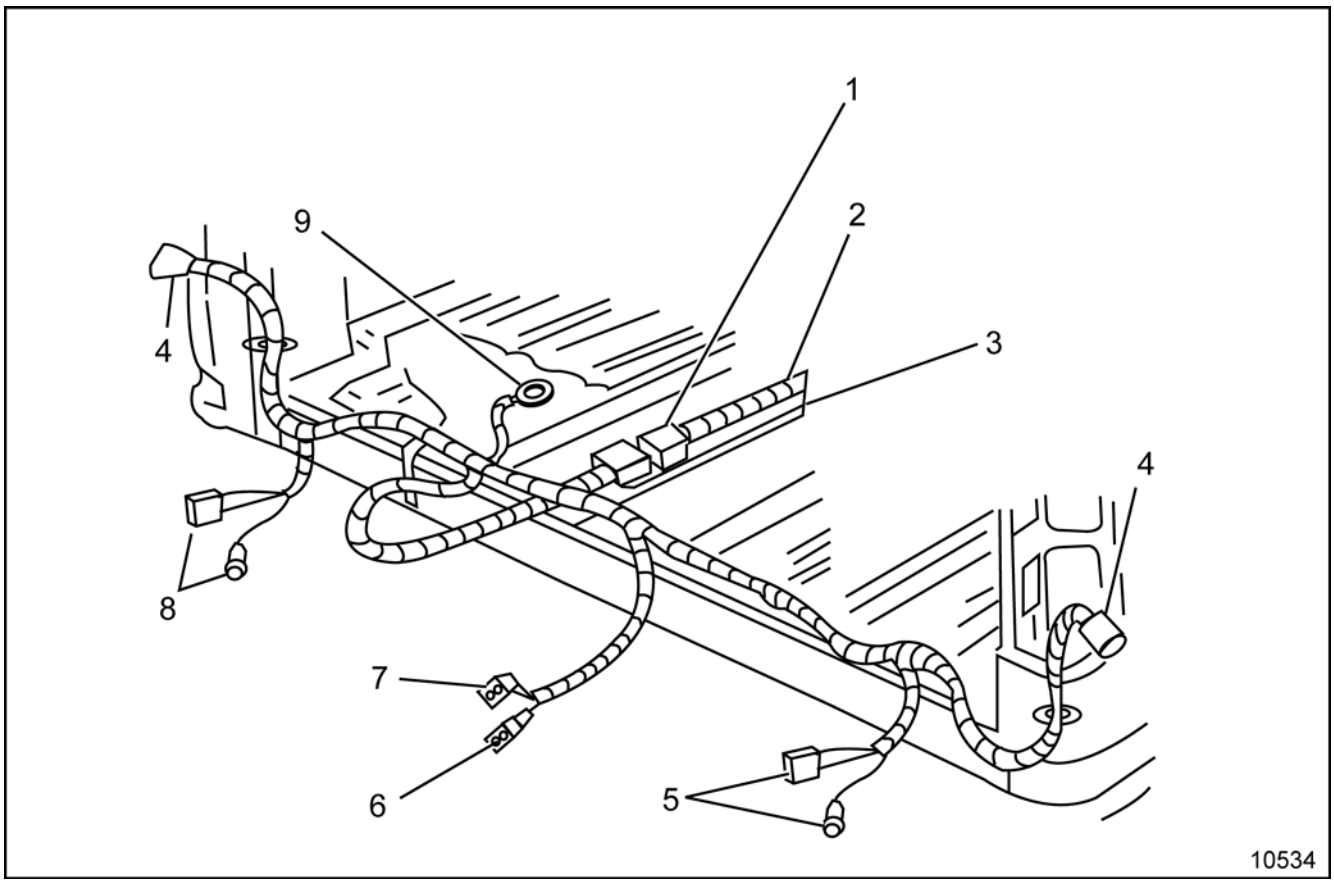
Name	Location	Locator View	Connector End View
G100M	In the front blackout (B/O) harness front of vehicle	Power and Grounding Component Views	—
G101M	In the 24V generator harness	—	—
G103M	Right side of engine block	—	—
G104M	Left side of bulkhead next to the power brake booster	—	—
G105M	Left side of bulkhead next to the power brake booster	—	—
G301M	Right outer side of frame rail	—	—
G304M	Under left side of I/P	—	—
G901M	In the rear blackout (B/O) harness at the rear of the vehicle	Power and Grounding Component Views	—
G902M	Right side of the rear bumper	—	—
G903M	Left side of the rear bumper	—	—
S100M	In front bracket wiring harness behind front bumper	—	—
S102M	In the front blackout (B/O) harness at front bumper	—	—
S104M	In the 24V generator harness in the engine compartment	—	—
S105M	In the 24V generator harness in the engine compartment	—	—
S106M	In the relay block harness next to the Underhood fuse block	—	—
S107M	In the relay block harness next to the Underhood fuse block	—	—
S301M	In the voltage regulator harness under the I/P	—	—
S304M	In I/P wiring harness under I/P	—	—
S306M	In the relay block harness next to the Underhood fuse block	—	—
S307M	In the relay block harness next to the Underhood fuse block	—	—
S308M	In the interrupt relay harness under the I/P	—	—
S309M	In the interrupt relay harness under the I/P	—	—
S310M	In the interrupt relay harness under the I/P	—	—
S311M	In the interrupt relay harness under the I/P	—	—
S312M	In the interrupt relay harness under the I/P	—	—
S313M	In the I/P harness under the I/P	—	—
S901M	In the rear blackout (B/O) harness at rear bumper	—	—

Master Electrical Component List (cont'd)

Name	Location	Locator View	Connector End View
S902M	In the rear blackout (B/O) harness at rear bumper	___	___
S903M	In the trailer harness at rear bumper	___	___
S904M	In the rear trailer harness at rear bumper	___	___
S905M	In the rear blackout (B/O) harness at the rear bumper	___	___
S906M	In the extension lamp harness behind the left rear taillamp	___	___
S907M	In the rear blackout (B/O) harness at the rear bumper	___	___
S908M	In the trailer harness at rear bumper	___	___
S909M (Utility)	In the trailer harness at rear bumper	___	___

Power and Grounding Component Views

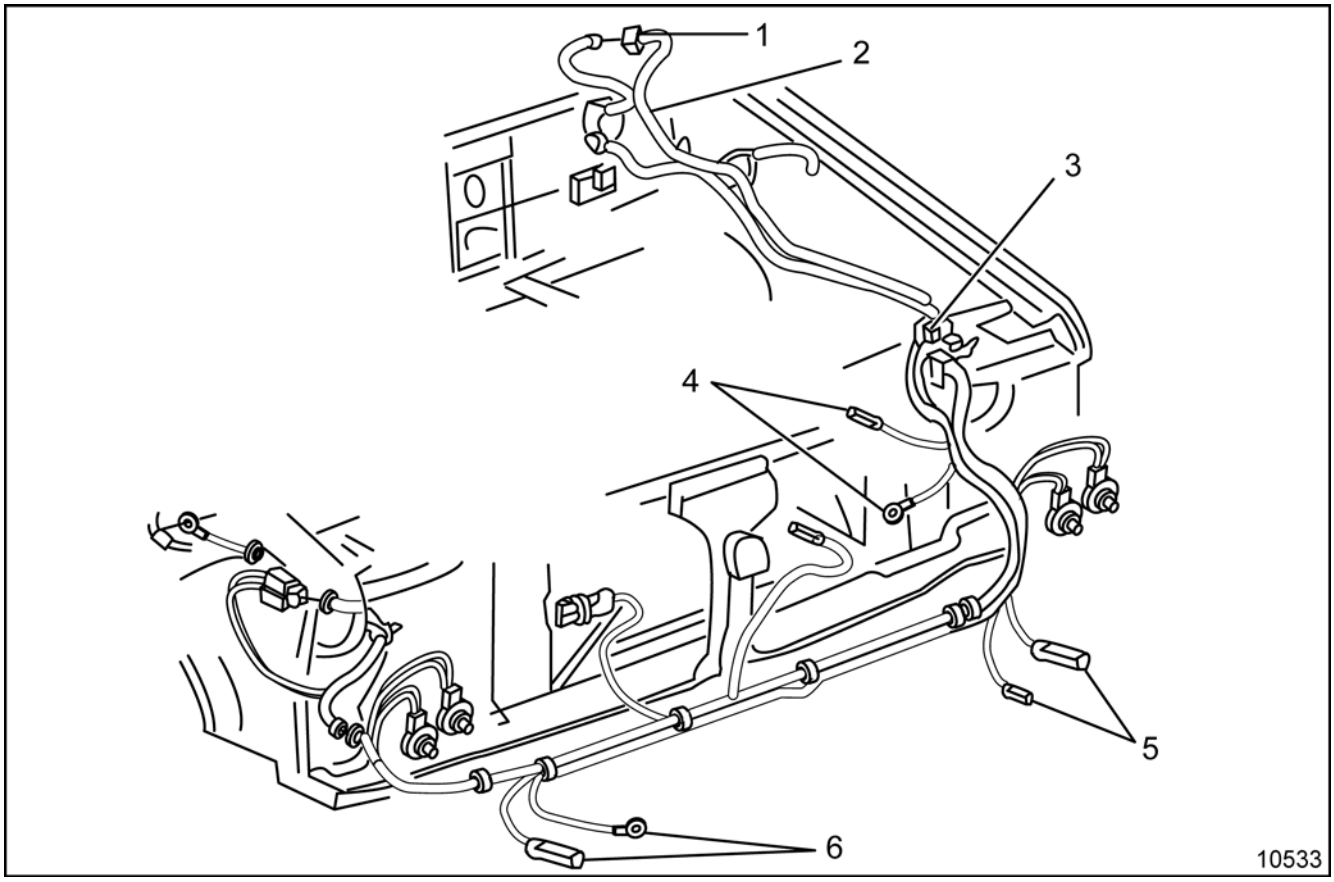
Rear Lamp Harness



Legend

(1) C908M
(2) Auxiliary Rear Lamp Extension Harness
(3) Rear of Vehicle
(4) Rear Taillamp Connectors
(5) C902M
(6) C901M
(7) C900M
(8) C903M
(9) G901M

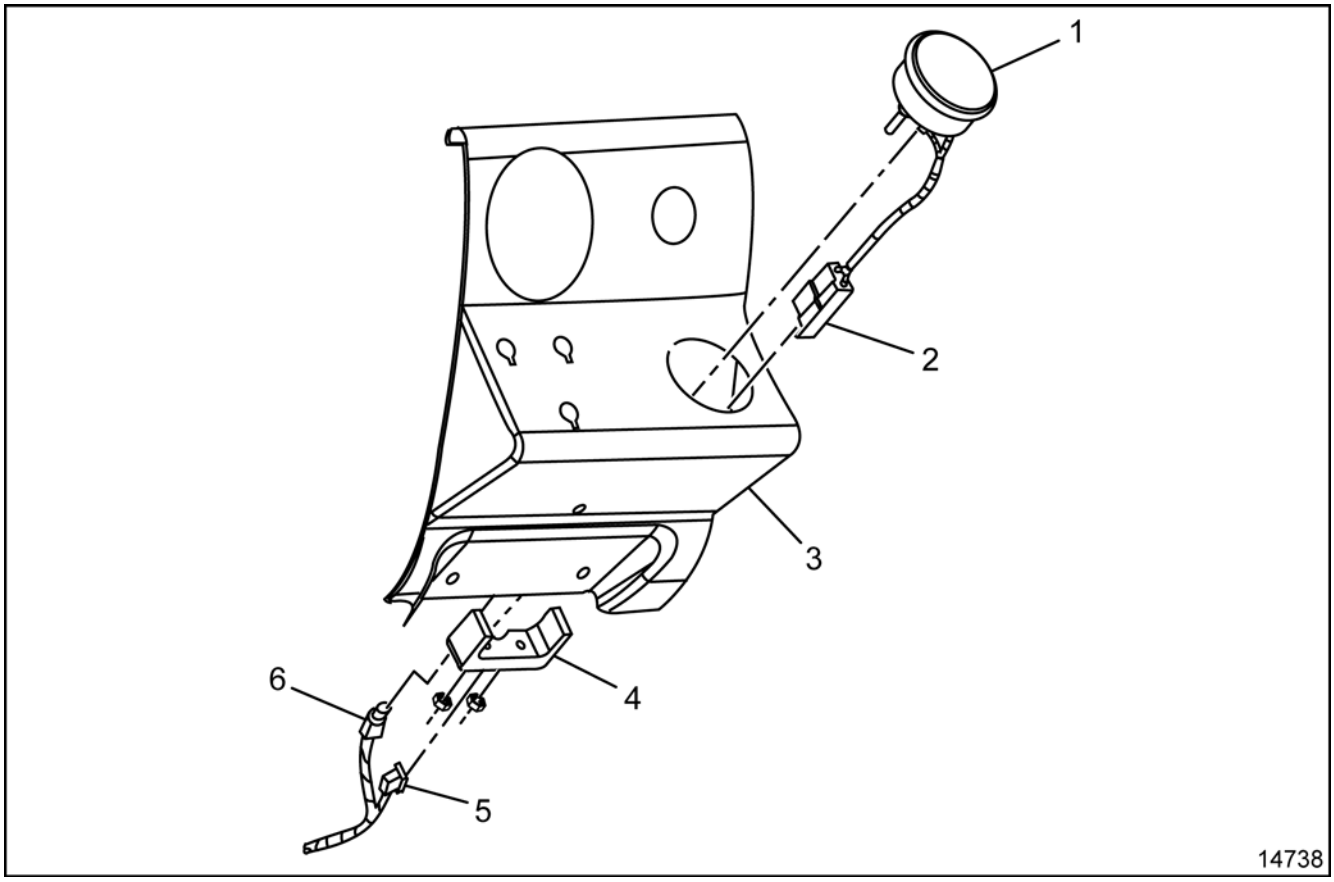
Forward Blackout (B/O) Lamp Harness



Legend

(1) I/P Wiring Harness
(2) Forward Lamp Harness
(3) G100M
(4) C102M
(5) C101M
(6) C100M

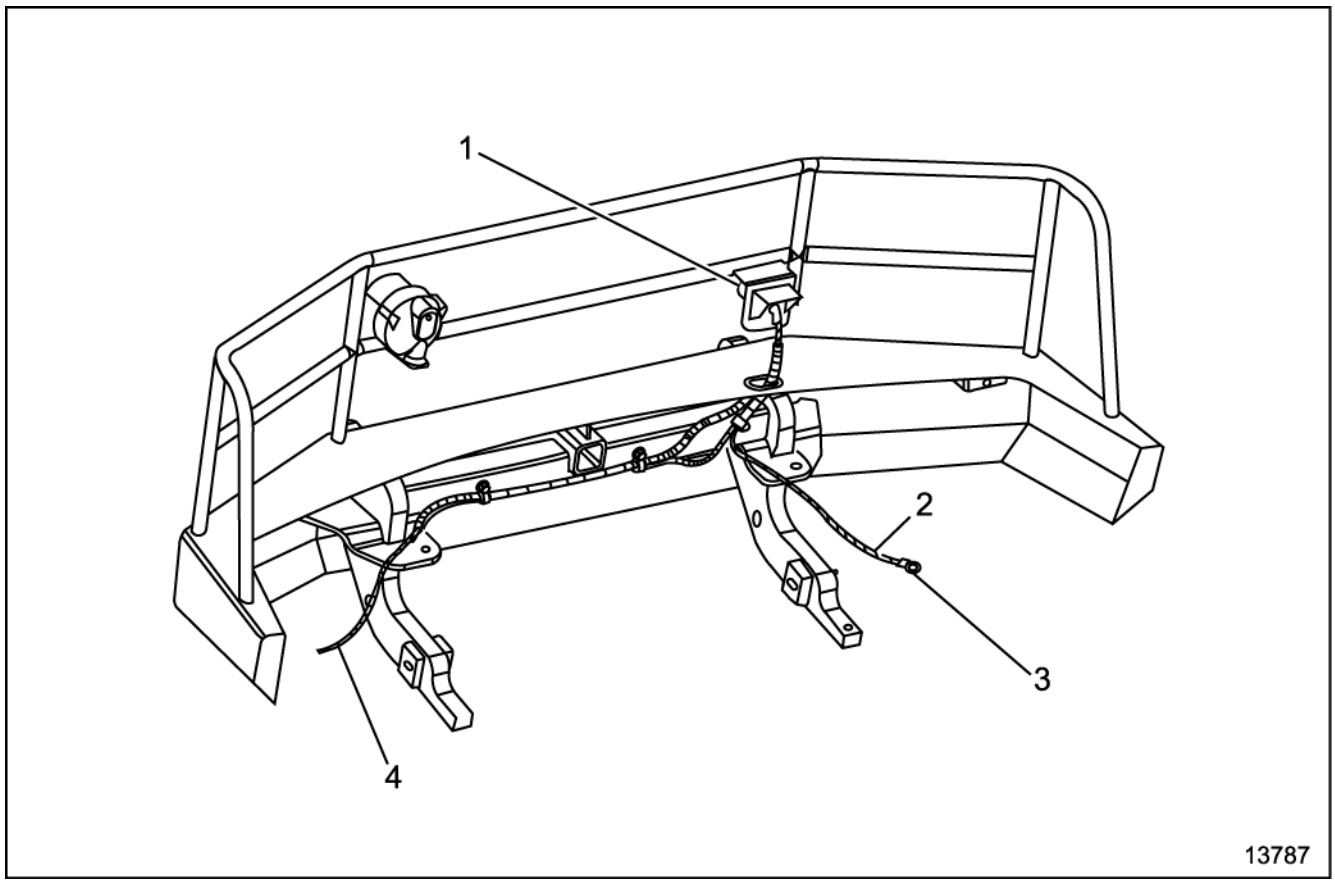
Voltmeter and Lamp



Legend

(1) Voltmeter (24V)
(2) Voltmeter Connector
(3) Accessory Panel
(4) Bracket
(5) Harness Connector
(6) Voltmeter Illumination Bulb

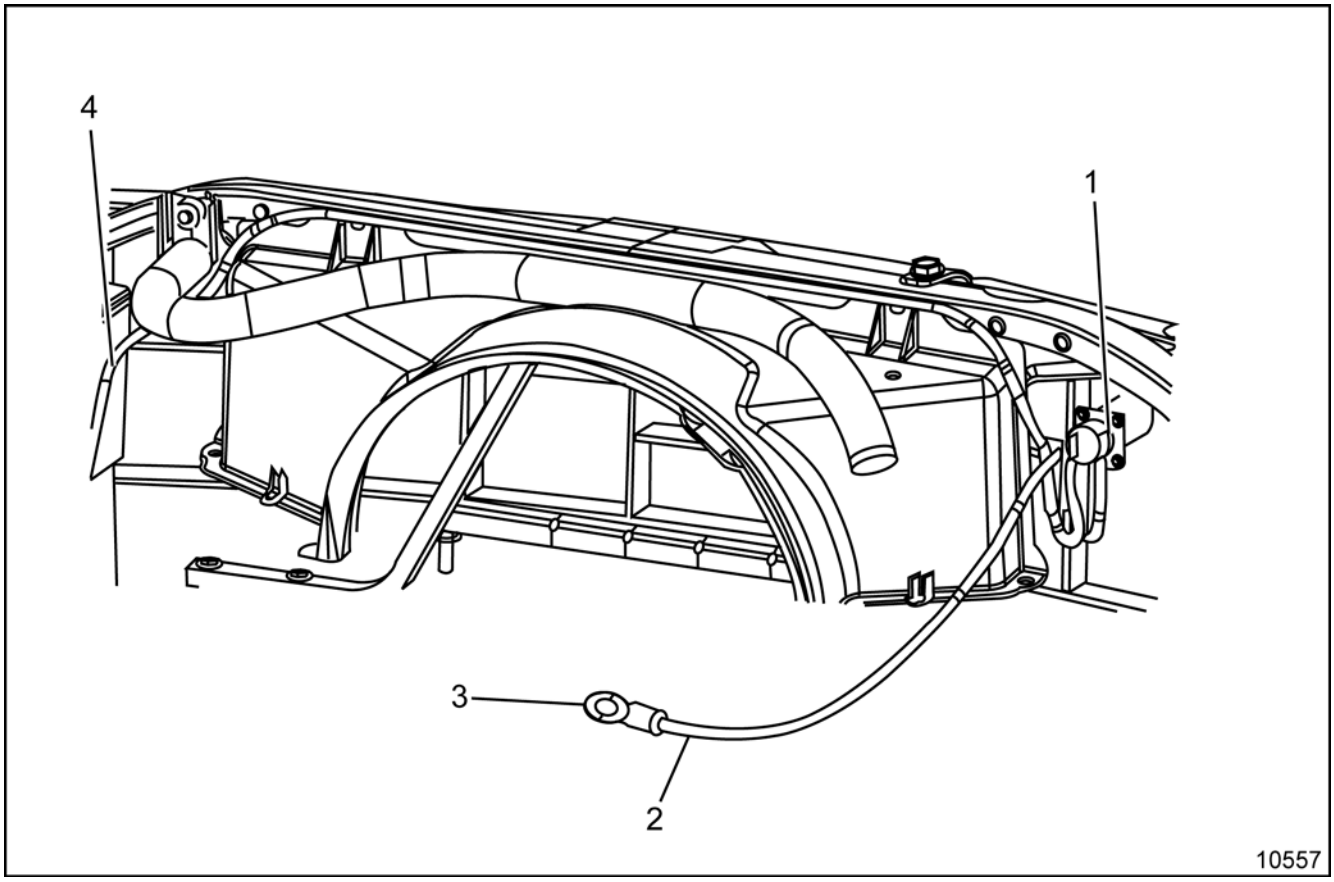
Slave Receptacle Harness Routing



Legend

(1) Slave Receptacle
(2) Negative Cable
(3) Negative Connection to Engine Block
(4) Positive Cable to Junction Block

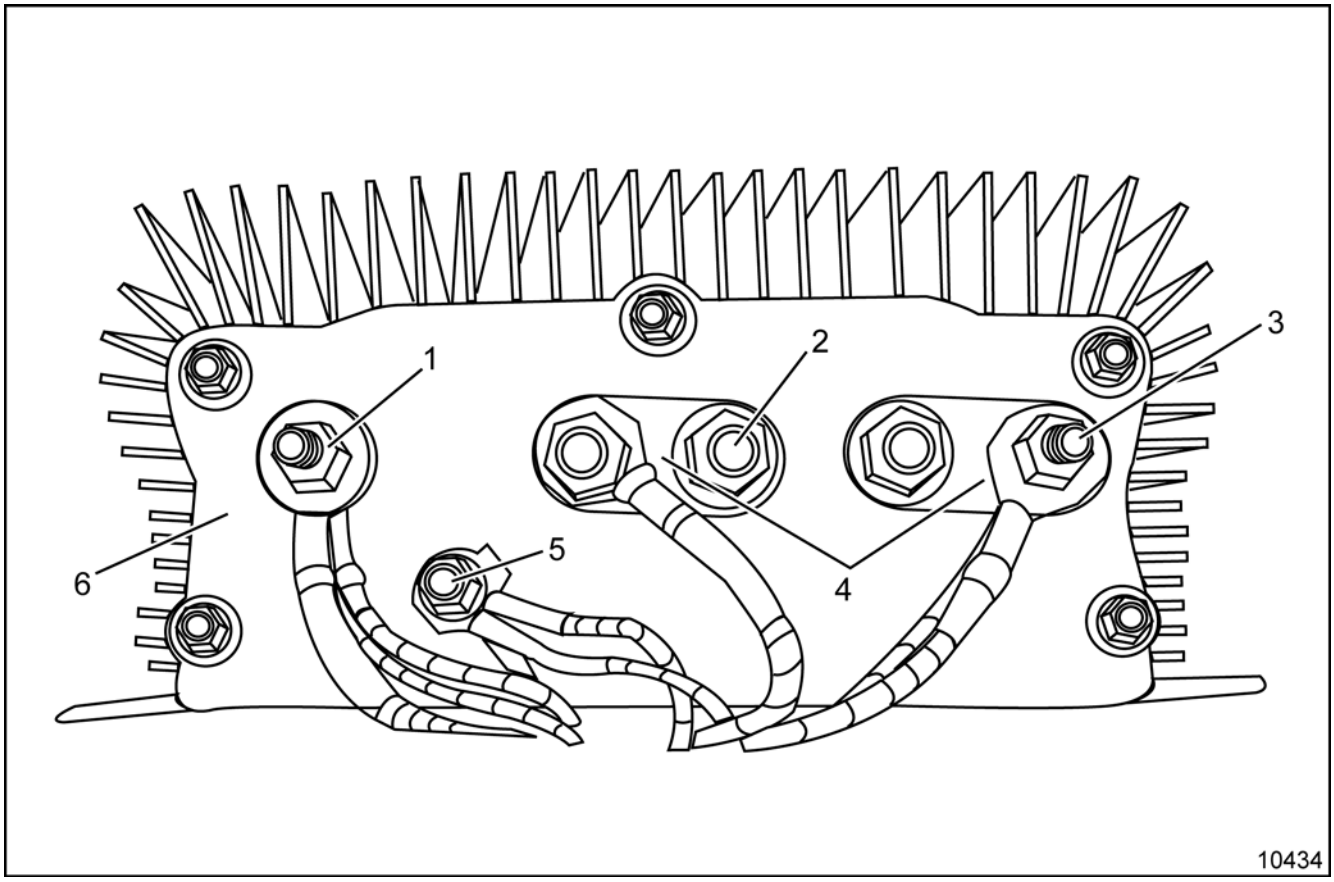
Slave Receptacle Harness Routing (Utility)



Legend

(1) Slave Receptacle
(2) Negative Cable
(3) Negative Connection to Engine Block
(4) Positive Cable to 24V Battery

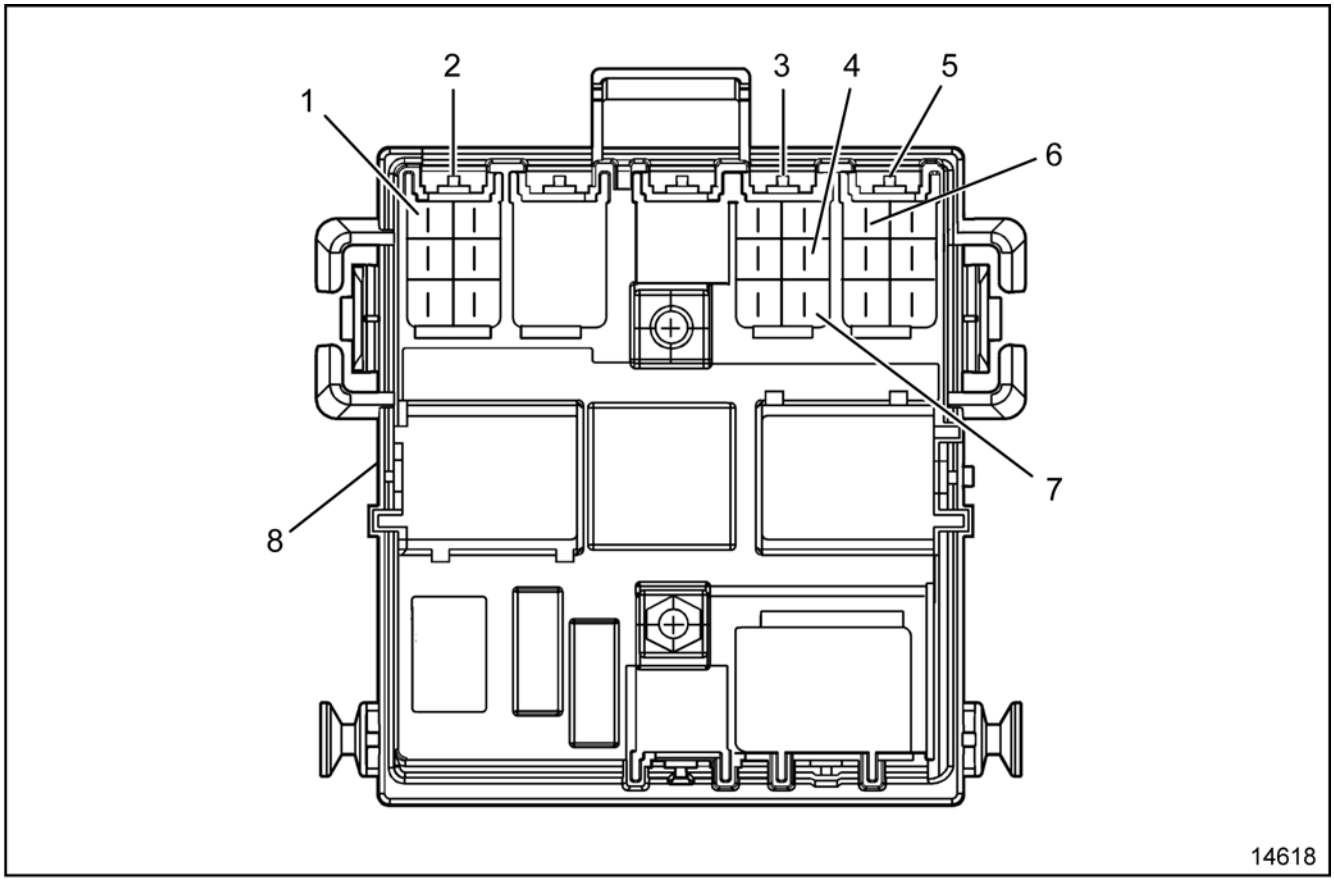
Power Converter



Legend

(1) Ground Terminal
(2) 12V Terminal
(3) 24V Terminal
(4) Fuse Link Covers
(5) Ignition Terminal
(6) Power Converter

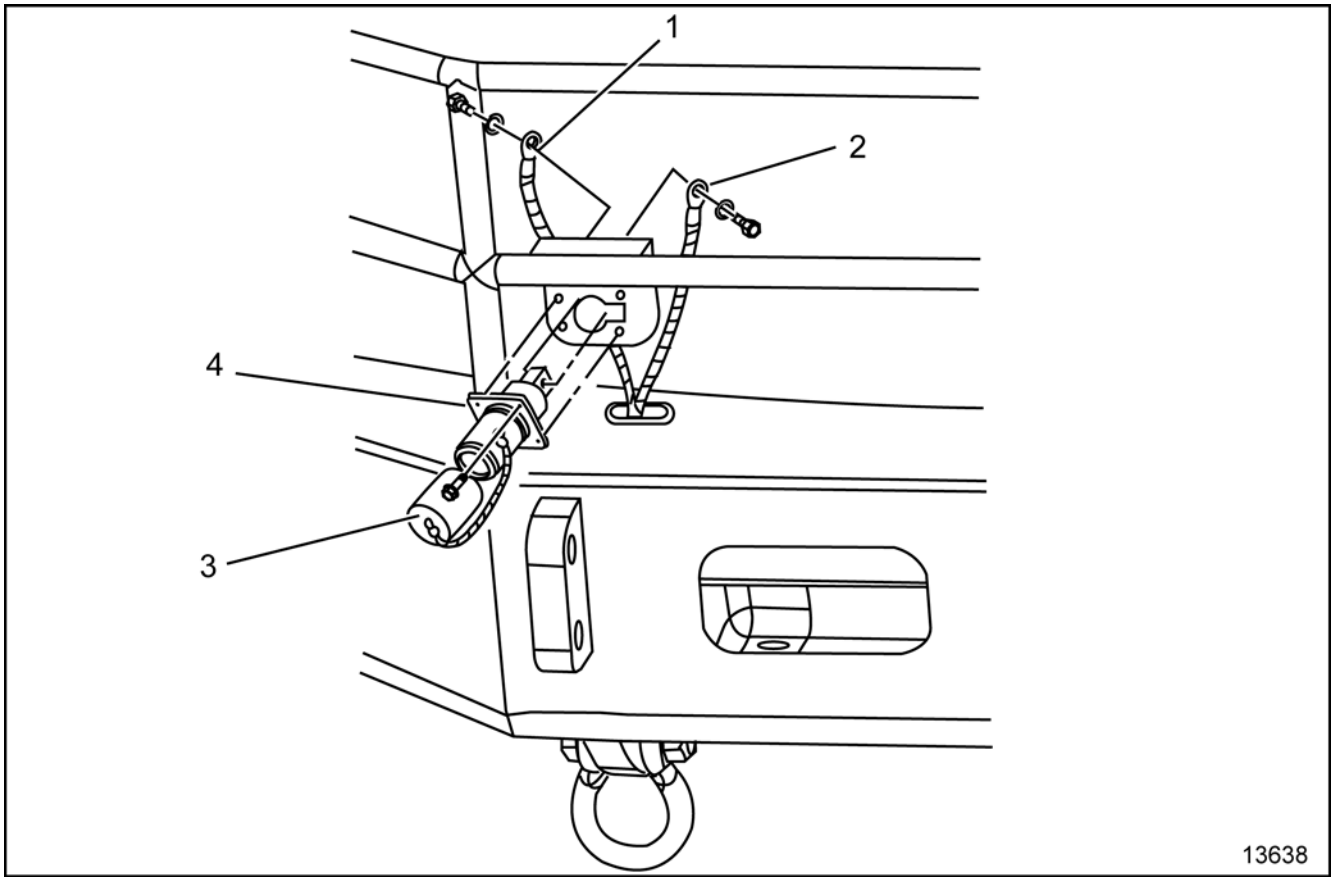
Relay Block – I/P



Legend

(1) Cavity C – Blackout (B/O) Switch
(2) C8 – Connector Location
(3) C5 – Connector Location
(4) Cavity E – 24V Meter Ground
(5) C4 – Connector Location
(6) Cavity D – Map/Receptacle (If equipped)
(7) Cavity F – 24V Meter
(8) Relay Block – I/P

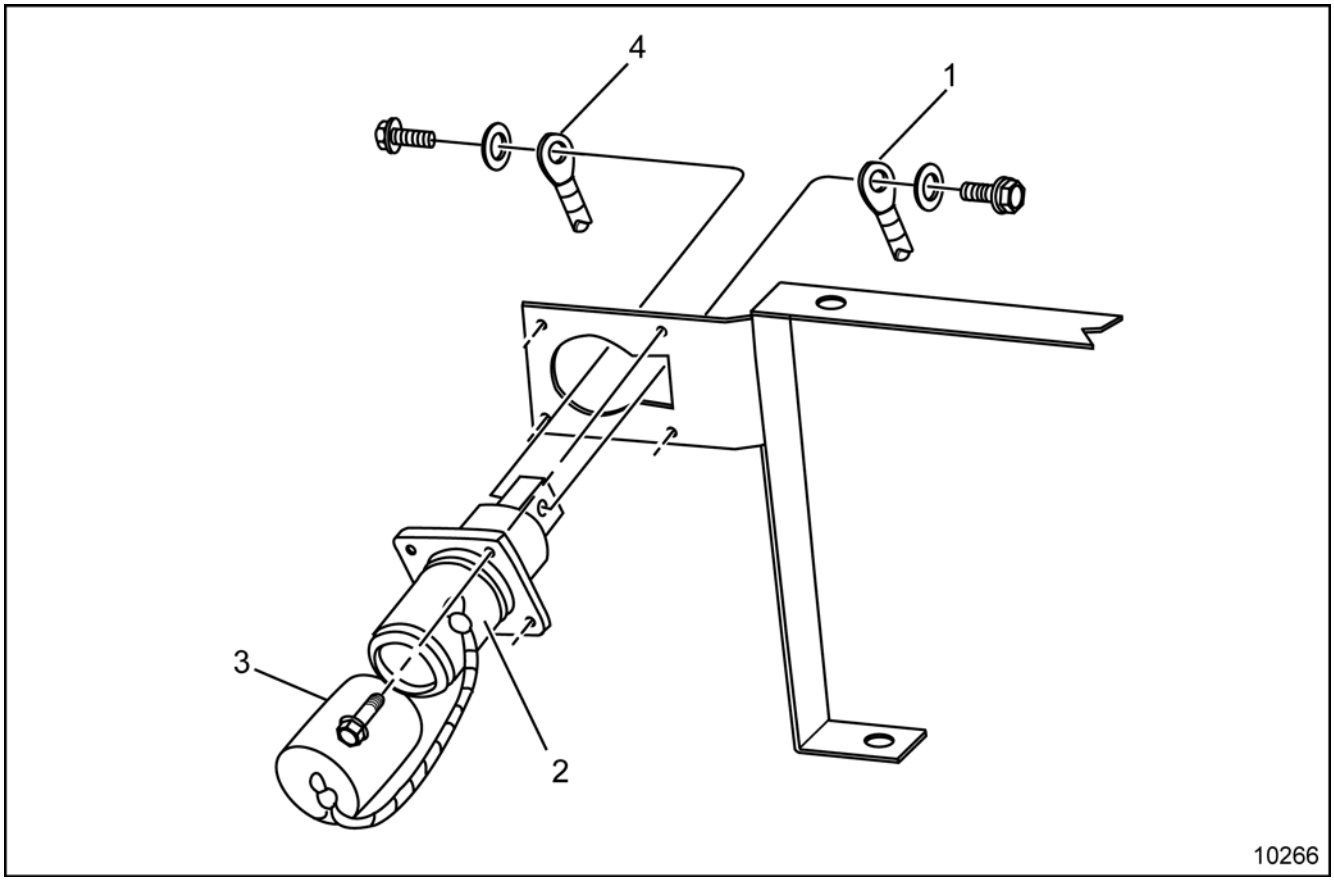
Slave Receptacle Assembly (Pickup)



Legend

(1) Battery Negative Ground (Black)
(2) Battery Positive Power (Red)
(3) Slave Receptacle Cover
(4) Slave Receptacle

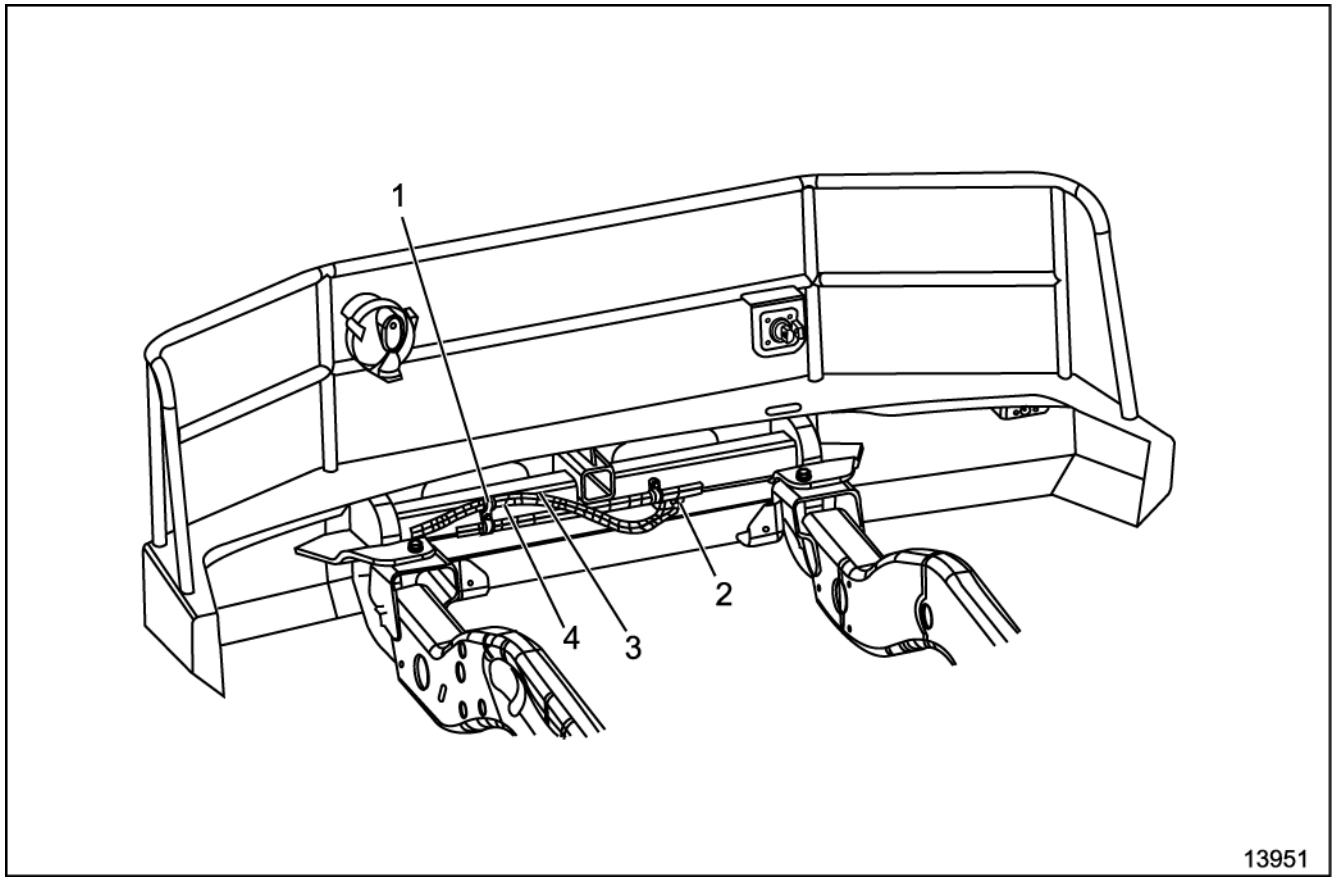
Slave Receptacle Assembly (Utility)



Legend

(1) Battery Positive Power (Red)
(2) Slave Receptacle
(3) Slave Receptacle Cover
(4) Battery Negative Ground (Black)

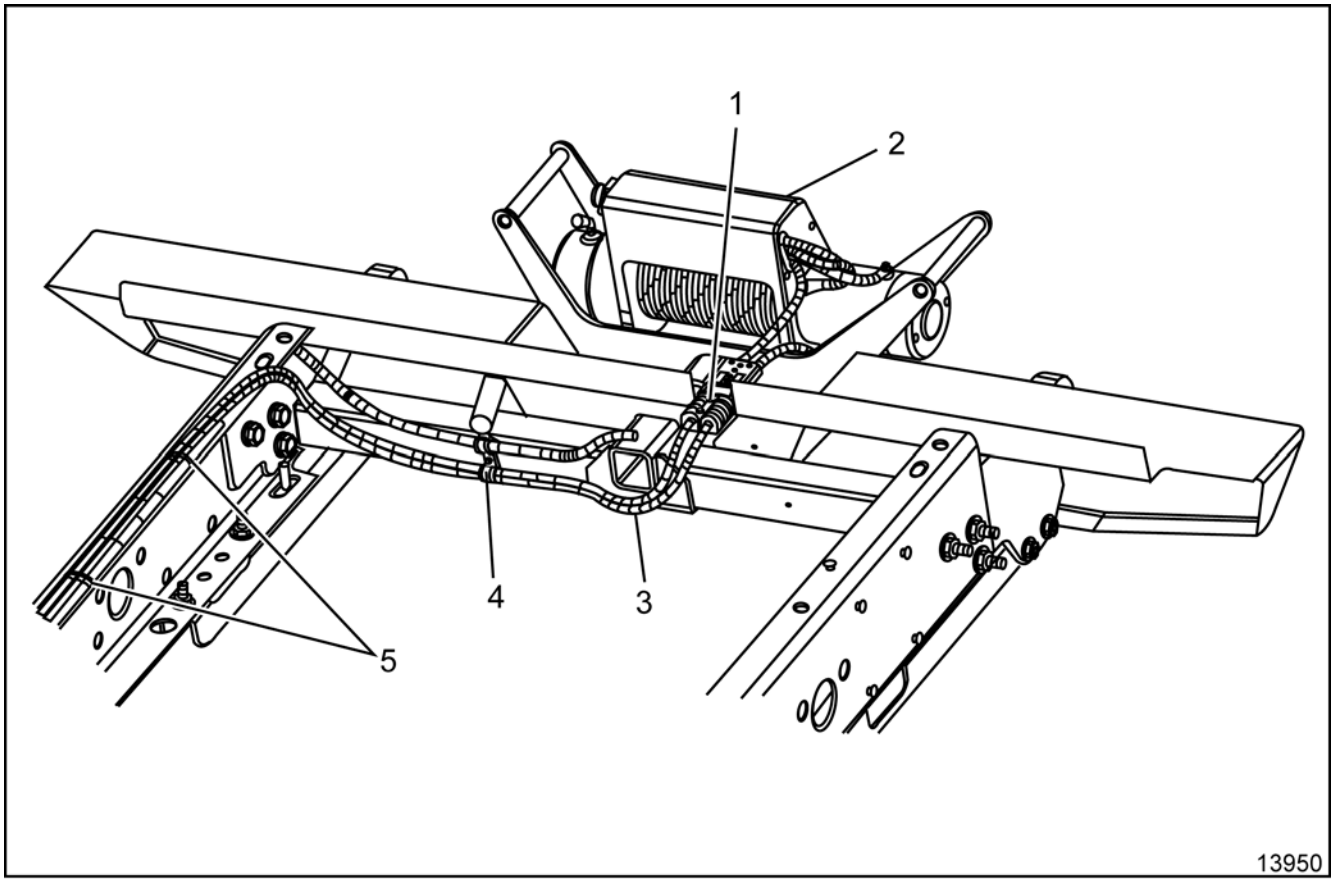
Front Winch Harness Routing



Legend

(1) Harness Clamp
(2) Front Winch Prep Connector
(3) Positive Winch Cable to Junction Block
(4) Negative Winch Cable to Engine Block

Winch Prep Harness Routing Rear

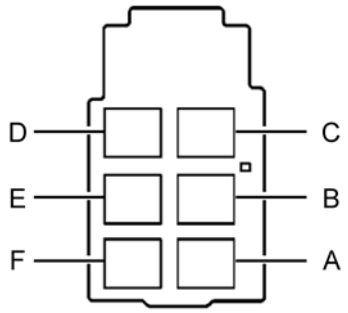


Legend

(1) Winch Connector
(2) Multi-Mount Winch (Not included in Prep)
(3) Harness to Junction Block
(4) Harness Clamp
(5) Wiring Harness Straps

Electrical Center Identification Views

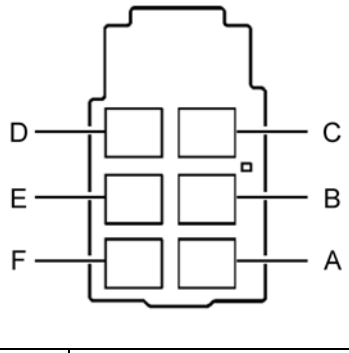
Relay Block – I/P C5



Connector Part Information	• 12193928 • 6-Way F Metri-Pack 280 Series Flexlock (GRY)

Pin	Wire Color	Circuit No.	Function
A	___	___	Not Used
B	PPL/WHT	1382	LED Dimming Signal (ZX3)
	PPL/WHT	1382	LED Dimming Signal (5G4/5X7/5Y0/TRW)
C	TAN/WHT	1384	Selective Ride Control Switch Signal (ZX3)
D	PNK	739	Ignition 1 Voltage (ZX3)
E	BLK	150	Ground
F	BRN	9	24V Meter Supply Voltage

Relay Block – I/P C8

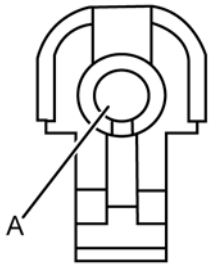


Connector Part Information	• 12193930 • 6-Way F Metri-Pack 280 Series Flexlock (BLK)

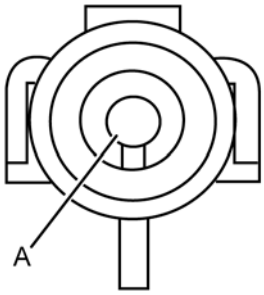
Pin	Wire Color	Circuit No.	Function
A	ORN	2340	Battery Positive Voltage (5G4/TRW)
B	___	___	Not Used
C	ORN	40	Blackout (B/O) Service Switch
D	___	___	Not Used
E	ORN	4540	Battery Positive Voltage (5G4/5X7/5Y0/TRW)
F	BLK	1050	Ground (TRW)

Inline Harness Connector End Views

Inline Harness Connector C100M



10561

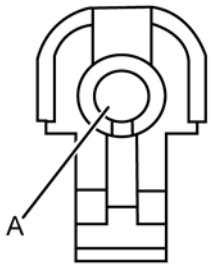


10565

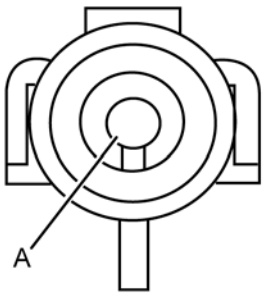
Connector Part Information	• 12015791 • 1-Way F Weather Pack (BLK)	Connector Part Information	• 12010996 • 1-Way M Weather Pack (BLK)

Pin	Wire Color	Circuit No.	Function	Pin	Wire Color	Circuit No.	Function
A	BRN/WHT	900	Blackout (B/O) Marker Lamp (RF) Supply Voltage	A	BLK	___	Blackout (B/O) Marker Lamp (RF) Supply Voltage

Inline Harness Connector C101M



10561

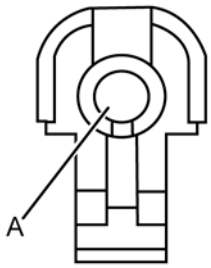


10565

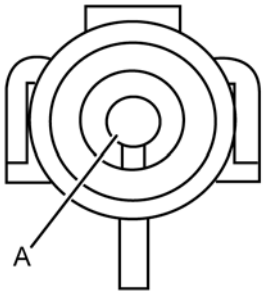
Connector Part Information	• 12015791 • 1-Way F Weather Pack (BLK)	Connector Part Information	• 12010996 • 1-Way M Weather Pack (BLK)

Pin	Wire Color	Circuit No.	Function	Pin	Wire Color	Circuit No.	Function
A	BRN/WHT	900	Blackout (B/O) Marker Lamp (LF) Supply Voltage	A	BLK	___	Blackout (B/O) Marker Lamp (LF) Supply Voltage

Inline Harness Connector C102M



10561

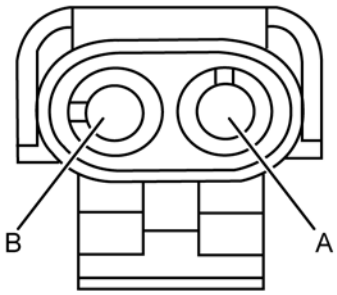


10565

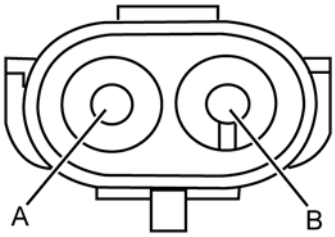
Connector Part Information	• 12015791 • 1-Way F Weather Pack (BLK)	Connector Part Information	• 12010996 • 1-Way M Weather Pack (BLK)

Pin	Wire Color	Circuit No.	Function	Pin	Wire Color	Circuit No.	Function
A	BLK	___	Blackout (B/O) Headlamp Supply Voltage	A	TAN/WHT	901	Blackout (B/O) Headlamp Supply Voltage

Inline Harness Connector C103M



10573

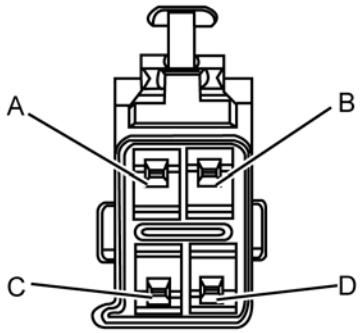


10574

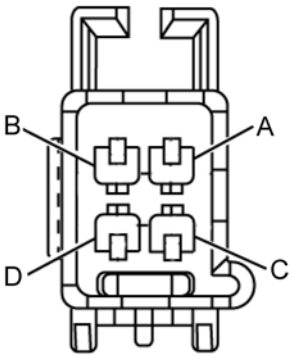
Connector Part Information	• 12010972 • 2-Way F Weather Pack SHD (BLK)	Connector Part Information	• 12015793 • 2-Way M Weather Pack TWR (BLK)

Pin	Wire Color	Circuit No.	Function	Pin	Wire Color	Circuit No.	Function
A	TAN/WHT	901	Blackout (B/O) Head Lamp Supply Voltage	A	TAN/WHT	901	Blackout (B/O) Head Lamp Supply Voltage
B	BRN/ WHT	900	Blackout (B/O) Marker Lamps Supply Voltage	B	BRN/ WHT	900	Blackout (B/O) Marker Lamps Supply Voltage

Inline Harness Connector C105M



10792

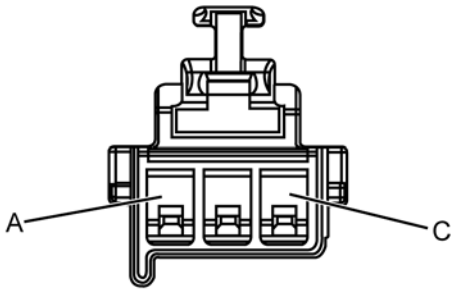


10791

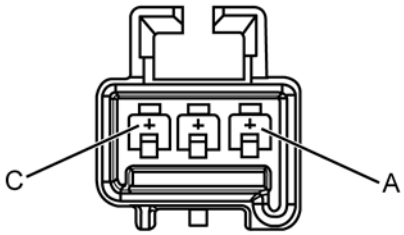
Connector Part Information	• **12129136** • **4-Way F Flex-Lock 280 Series (BLK)**	Connector Part Information	• **12129135** • **4-Way M M/P 280 Series (BLK)**

Pin	Wire Color	Circuit No.	Function	Pin	Wire Color	Circuit No.	Function
A	WHT	1080	Park Lamps Supply Voltage	A	WHT	1080	Park Lamps Supply Voltage
B	BLK/WHT	1969	Head Lamps (Hi Beam) Supply Voltage	B	BLK/WHT	1969	Head Lamps (Hi Beam) Supply Voltage
C	PNK/WHT	1970	Head Lamp (Low Beam) Supply Voltage	C	PNK/WHT	1970	Head Lamp (Low Beam) Supply Voltage
D	PNK	639	Turn Signals Supply Voltage	D	PNK	639	Turn Signals Supply Voltage

Inline Harness Connector C106M



14632

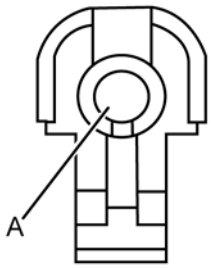


14633

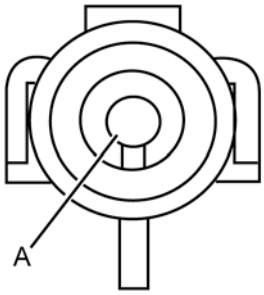
Connector Part Information	• **12129489** • **3-Way F M/P Flex-Lock 280 Series (BLK)**	Connector Part Information	• **12129490** • **3-Way M/P 280 Series (BLK)**

Pin	Wire Color	Circuit No.	Function	Pin	Wire Color	Circuit No.	Function
A	LT GRN/BLK	592	DRL Supply Voltage	A	LT GRN/BLK	592	DRL Supply Voltage
B	DK GRN	1329	Horn Supply Voltage	B	DK GRN	1329	Horn Supply Voltage
C	ORN	340	Radio Supply Voltage	C	ORN	340	Radio Supply Voltage

Inline Harness Connector C107M



10561

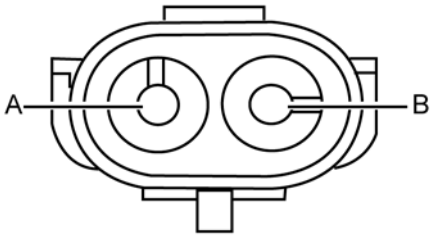


10565

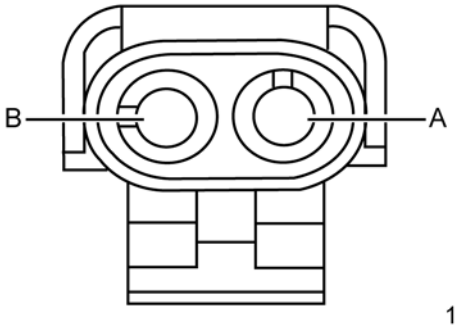
Connector Part Information	• 12015791 • 1-Way F Weather Pack (BLK)	Connector Part Information	• 12010996 • 1-Way M Weather Pack (BLK)

Pin	Wire Color	Circuit No.	Function	Pin	Wire Color	Circuit No.	Function
A	ORN	912	Supply Voltage to Relay Module	A	ORN	912	Supply Voltage to Relay Module

Inline Harness Connector C108M



10572

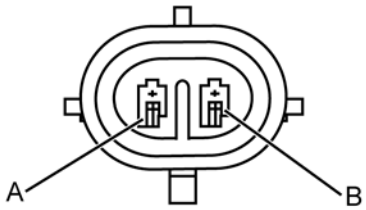


10571

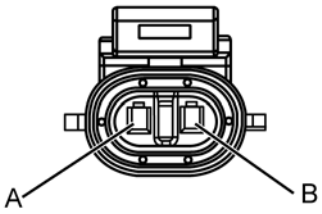
Connector Part Information	• 12105792 • 2-Way F Weather Pack TWR (BLK)	Connector Part Information	• 12010973 • 2-Way M Weather Pack TWR (BLK)

Pin	Wire Color	Circuit No.	Function	Pin	Wire Color	Circuit No.	Function
A	BRN/WHT	900	Rear Marker Lamp Supply Voltage	A	BRN/WHT	900	Rear Marker Lamp Supply Voltage
B	DK GRN/WHT	902	Rear Stoplamp Supply Voltage	B	DK GRN/WHT	902	Rear Stoplamp Supply Voltage

Inline Harness Connector C301M



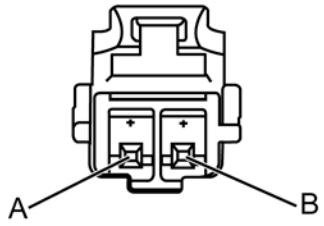
14634



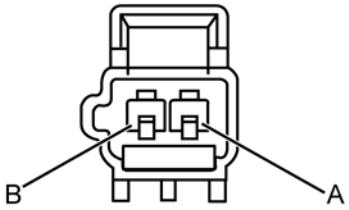
14635

Connector Part Information		• 12052641 • 2-Way F M/P 150 Series		Connector Part Information		• 12162000 • 2-Way M M/P 150 Series	
Pin	**Wire Color**	**Circuit No.**	**Function**	**Pin**	**Wire Color**	**Circuit No.**	**Function**
A	BRN/WHT	803	To Rear Topper Dome Switch	A	BRN	800	From Front Topper Dome Switch
B	BRN	800	To Rear Topper Dome Switch	B	BRN/WHT	803	From Front Topper Dome Switch

Inline Harness Connector C302M



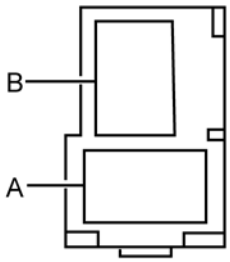
14637



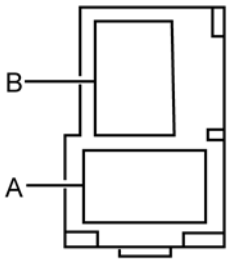
14636

Connector Part Information		• 12129081 • 2-Way F Flex-Lock 280 Series (BLK)		Connector Part Information		• 12129155 • 2-Way M M/P 280 Series (BLK)	
Pin	**Wire Color**	**Circuit No.**	**Function**	**Pin**	**Wire Color**	**Circuit No.**	**Function**
A	WHT	17	Brake Light Switch	A	WHT	17	Blackout (B/O) Service Switch
B	___	___	Not Used	B	___	___	Not Used

Inline Harness Connector C304M



10547

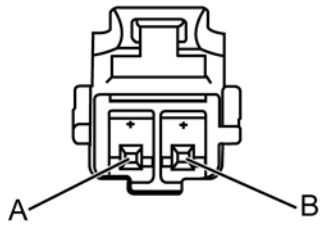


10547

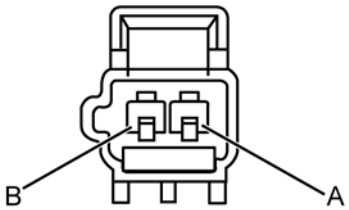
Connector Part Information	• 02973781 • 2-Way F Series 280 (BLK)	Connector Part Information	• 02984883 • 2-Way M Series 280 (BLK)

Pin	Wire Color	Circuit No.	Function	Pin	Wire Color	Circuit No.	Function
A	BRN	8008	Voltmeter Supply Voltage (Pickup)	A	BRN	8008	Voltmeter Supply Voltage (Pickup)
	ORN	901	Voltmeter Supply Voltage (Utility)		ORN	901	Voltmeter Supply Voltage (Utility)
B	BLK	150	Ground	B	BLK	150	Ground

Inline Harness Connector C305M



14637

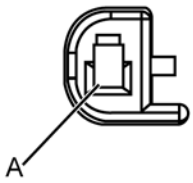


14636

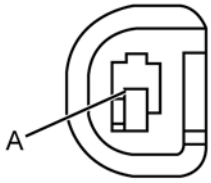
Connector Part Information	• 12129081 • 2-Way F Flex-Lock 280 Series (BLK)	Connector Part Information	• 12129155 • 2-Way M M/P 280 Series (BLK)

Pin	Wire Color	Circuit No.	Function	Pin	Wire Color	Circuit No.	Function
A	GRY/BLK	690	CTSY Supply Voltage	A	GRY/BLK	690	CTSY Supply Voltage
B	ORN/BLK	1732	Inadvertent Power Supply Voltage	B	ORN/BLK	1732	Inadvertent Power Supply Voltage

Inline Harness Connector C306M



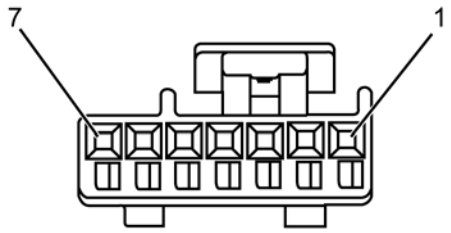
14629



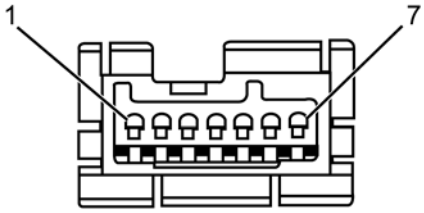
10796

Connector Part Information		• 12047682 • 1-Way F M/P 150 Series (BLK)		Connector Part Information		• 12047683 • 1-Way M M/P 150 Series (BLK)	
Pin	**Wire Color**	**Circuit No.**	**Function**	**Pin**	**Wire Color**	**Circuit No.**	**Function**
A	GRN	24	Backup Lamp Supply Voltage	A	LT GRY/BLK	24	Backup Lamp Supply Voltage

Inline Harness Connector C307M



14628

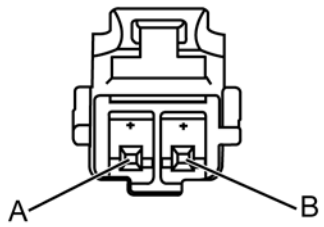


14627

Connector Part Information	• 12065873 • 7-Way F M/P 100	Connector Part Information	• 12065874 • 7-Way M M/P 100

Pin	Wire Color	Circuit No.	Function	Pin	Wire Color	Circuit No.	Function
1	GRY	1056	Dimmer Switch 5V Reference Voltage from Dimming Relay	1	GRY	1056	Dimmer Switch 5V Reference Voltage from Dimming Relay
2	ORN/BLK	2090	Dimmer Switch Signal from Dimming Relay	2	ORN/WHT	2090	Dimmer Switch Signal from Dimming Relay
3	GRY/BLK	2226	Dimmer Switch Low Reference from Dimming Relay	3	GRY/BLK	2226	Dimmer Switch Signal from Dimming Relay
4	___	___	Not Used	4	___	___	Not Used
5	GRY	1056	Dimmer Switch 5V Reference Voltage from BCM	5	GRY	1056	Dimmer Switch 5V Reference Voltage from BCM
6	YEL/BLK	2090	Dimmer Switch Signal from BCM	6	YEL/BLK	2090	Dimmer Switch Signal from BCM
7	GRY/BLK	2226	Dimmer Switch Signal from BCM	7	GRY/BLK	2226	Dimmer Switch Signal from BCM

Inline Harness Connector C308M



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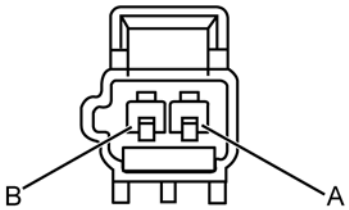
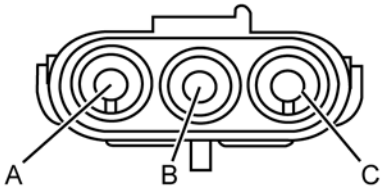


14636

Connector Part Information	• 12129081 • 2-Way F Flex-Lock 280 Series (BLK)	Connector Part Information	• 12129155 • 2-Way M M/P 280 Series (BLK)

Pin	Wire Color	Circuit No.	Function	Pin	Wire Color	Circuit No.	Function
A	ORN	912	Blackout (B/O) Service Switch Voltage	A	ORN	912	Blackout (B/O) Service Switch Voltage
B	BLK	150	Ground	B	BLK	150	Ground

Inline Harness Connector C900M



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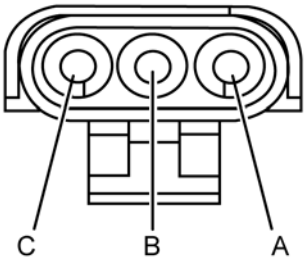
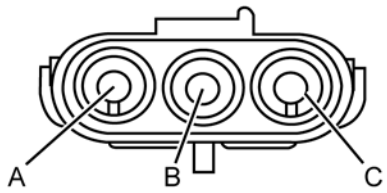


10582

Connector Part Information	• 12010717 • 3-Way F Weather Pack TWR (BLK)	Connector Part Information	• 12015793 • 3-Way M Weather Pack TWR (BLK)

Pin	Wire Color	Circuit No.	Function	Pin	Wire Color	Circuit No.	Function
A	BRN	30	Blackout (B/O) Marker Lamps (Pickup)	A	BRN	30	Blackout (B/O) Marker Lamps (Pickup)
	BRN/WHT	900	Blackout (B/O) Marker Lamps (Utility)		BRN	900	Blackout (B/O) Marker Lamps (Utility)
B	YEL	18	S/T Lamp Feed (Left)	B	YEL	18	S/T Lamp Feed (Left)
C	BLK	150	Ground	C	BLK	150	Ground

Inline Harness Connector C901M



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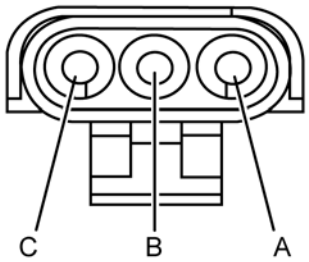
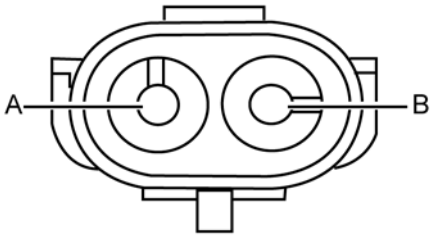


10582

Connector Part Information	• 12010717 • 3-Way F Weather Pack SHD (BLK)	Connector Part Information	• 12015793 • 3-Way M Weather Pack SHD (BLK)

Pin	Wire Color	Circuit No.	Function	Pin	Wire Color	Circuit No.	Function
A	BRN	9	Park Lamp Feed	A	BRN	9	Park Lamp Feed
B	GRN	30	Blackout (B/O) Stoplamps (Pickup)	B	DK GRN	30	Blackout (B/O) Stoplamps (Pickup)
	GRN/WHT	902	Blackout (B/O) Stoplamps (Utility)		DK GRN	902	Blackout (B/O) Stoplamps (Utility)
C	DK GRN	19	S/T Lamps (Right)	C	DK GRN	19	S/T Lamps (Right)

Inline Harness Connector C902M



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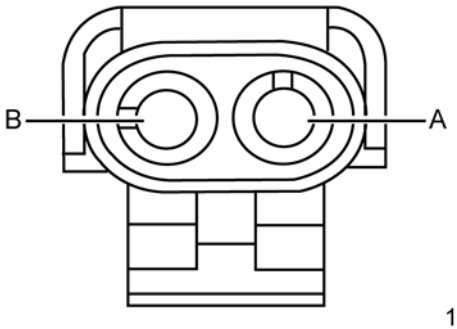
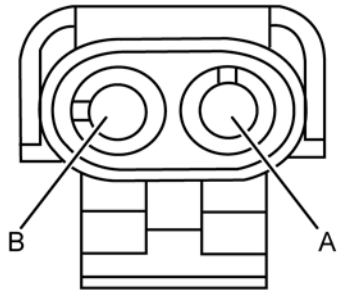


10571

Connector Part Information	• 12015792 • 2-Way F Weather Pack TWR (BLK)	Connector Part Information	• 12010973 • 2-Way M Weather Pack TWR (BLK)

Pin	Wire Color	Circuit No.	Function	Pin	Wire Color	Circuit No.	Function
A	GRN/WHT	902	Right Rear Blackout (B/O) Stoplamps	A	GRN/WHT	902	Right Rear Blackout (B/O) Stoplamps
B	BRN/WHT	900	Right Rear Blackout (B/O) Marker Lamps	B	BRN/WHT	900	Right Rear Blackout (B/O) Marker Lamps

Inline Harness Connector C903M



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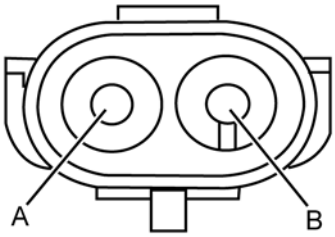
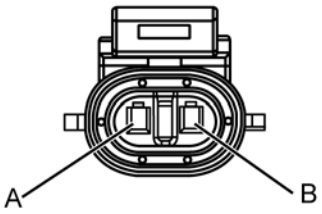


10574

Connector Part Information	• 12015792 • 2-Way F Weather Pack TWR (BLK)	Connector Part Information	• 12010973 • 2-Way M Weather Pack SHD (BLK)

Pin	Wire Color	Circuit No.	Function	Pin	Wire Color	Circuit No.	Function
A	GRN/WHT	902	Left Rear Blackout (B/O) Stoplamps	A	GRN/WHT	902	Left Rear Blackout (B/O) Stoplamps
B	BRN/WHT	900	Left Rear Blackout (B/O) Marker Lamps	B	BRN/WHT	900	Left Rear Blackout (B/O) Marker Lamps

Inline Harness Connector C904M



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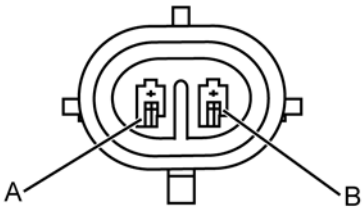
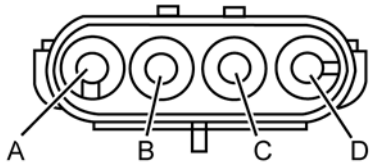


14634

Connector Part Information	• 12052641 • 2-Way F MP 150 Series	Connector Part Information	• 12162000 • 2-Way M MP 150 Series

Pin	Wire Color	Circuit No.	Function	Pin	Wire Color	Circuit No.	Function
A	BLK	1050	CHML Supply Voltage	A	RED	1620	CHML Supply Voltage
B	BLU	1050	Ground	B	BLK	1050	Ground

Inline Harness Connector C905M



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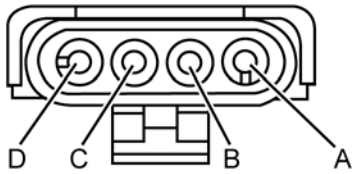
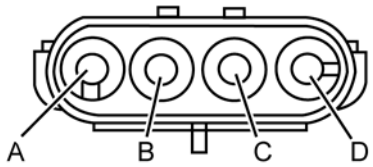


10584

Connector Part Information	• 12020832 • 4-Way F Weather Pack TWR (BLK)	Connector Part Information	• 12020830 • 4-Way M Weather Pack SHD (BLK)

Pin	Wire Color	Circuit No.	Function	Pin	Wire Color	Circuit No.	Function
A	BRN	915	Park Lamps	A	BRN	9	Park Lamps
B	YEL	18	S/T Lamps (Left)	B	YEL	18	S/T Lamps (Left)
C	BLK	19	Ground	C	BLK	150	Ground
D	GRN	916	S/T Lamps (Right)	D	DK GRN	19	S/T Lamps (Right)

Inline Harness Connector C906M



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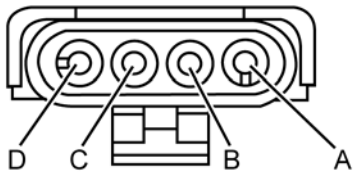
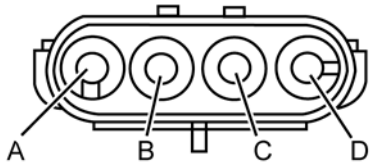


10584

Connector Part Information	• 12020832 • 4-Way F Weather Pack TWR (BLK)	Connector Part Information	• 12020830 • 4-Way M Weather Pack SHD (BLK)

Pin	Wire Color	Circuit No.	Function	Pin	Wire Color	Circuit No.	Function
A	BRN	2109	Park Lamps	A	BRN	2109	Park Lamps
B	YEL	1618	S/T Lamps (Left)	B	YEL	1608	S/T Lamps (Left)
C	BLK	1750	Ground	C	BLK	1750	Ground
D	DK GRN	1619	S/T Lamps (Right)	D	DK GRN	1619	S/T Lamps (Right)

Inline Harness Connector C907M



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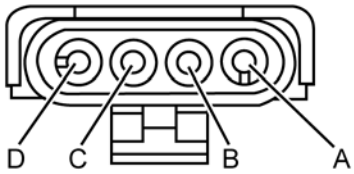
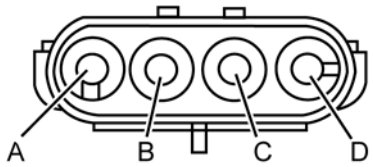


10584

Connector Part Information	• 12020832 • 4-Way F Weather Pack TWR (BLK)	Connector Part Information	• 12020830 • 4-Way M Weather Pack SHD (BLK)

Pin	Wire Color	Circuit No.	Function	Pin	Wire Color	Circuit No.	Function
A	BRN	2109	Park Lamps	A	BRN	2109	Park Lamps
B	YEL	1618	S/T Lamps (Left)	B	YEL	1618	S/T Lamps (Left)
C	BLK	1750	Ground	C	BLK	1750	Ground
D	DK GRN	1619	S/T Lamps (Right)	D	DK GRN	1619	S/T Lamps (Right)

Inline Harness Connector C908M



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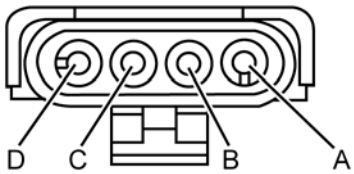
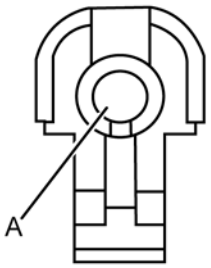


10584

Connector Part Information	• 12020832 • 4-Way F Weather Pack TWR (BLK)	Connector Part Information	• 12020830 • 4-Way M Weather Pack SHD (BLK)

Pin	Wire Color	Circuit No.	Function	Pin	Wire Color	Circuit No.	Function
A	BRN	2109	Trailer Park Lamp Supply Voltage	A	BRN	2109	Trailer Lamp Supply Voltage
B	YEL	1608	Left Stop/Turn Supply Voltage	B	YEL	1608	Left Stop/Turn Supply Voltage
C	BLK	1750	Ground	C	BLK	1750	Ground
D	DK GRN	1619	Right Stop/Turn Supply Voltage	D	GRN	1619	Right Stop/Turn Supply Voltage

Inline Harness Connector C909M



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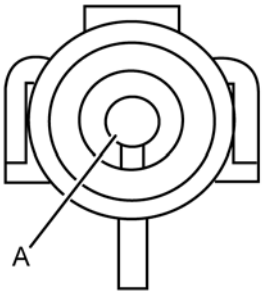
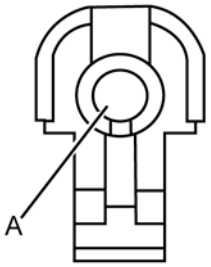


10565

Connector Part Information	• 12015791 • 1-Way F Weather Pack (BLK)	Connector Part Information	• 12010996 • 1-Way M Weather Pack (BLK)

Pin	Wire Color	Circuit No.	Function	Pin	Wire Color	Circuit No.	Function
A	RED	87	Power to Trailer Relays	A	RED	802	Power to Trailer Relays

Inline Harness Connector C910M



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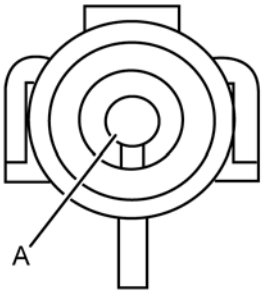

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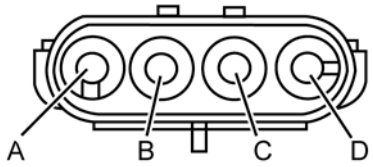
Connector Part Information	• 12015791 • 1-Way F Weather Pack (BLK)	Connector Part Information	• 12010996 • 1-Way M Weather Pack (BLK)

Pin	Wire Color	Circuit No.	Function	Pin	Wire Color	Circuit No.	Function
A	BRN	9	Park Lamps Supply Voltage	A	BRN/WHT	2609	Park Lamps Supply Voltage

Inline Harness Connector C911M



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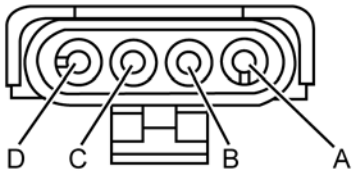


10584

Connector Part Information		• **12020832** • **4-Way F Weather Pack TWR (BLK)**		**Connector Part Information**		• **12020830** • **4-Way M Weather Pack SHD (BLK)**	
Pin	**Wire Color**	**Circuit No.**	**Function**	**Pin**	**Wire Color**	**Circuit No.**	**Function**
A	BRN	2109	Trailer Park Lamp Supply Voltage	A	BRN	9	Trailer Lamp Supply Voltage
B	YEL	1608	Left Stop/Turn Supply Voltage	B	YEL	18	Left Stop/Turn Supply Voltage
C	BLK	1750	Ground	C	BLK	150	Ground
D	DK GRN	1619	Right Stop/Turn Supply Voltage	D	DK GRN	19	Right Stop/Turn Supply Voltage

BLANK

Repair Instructions

Auxiliary Lamp Harness Replacement – Front

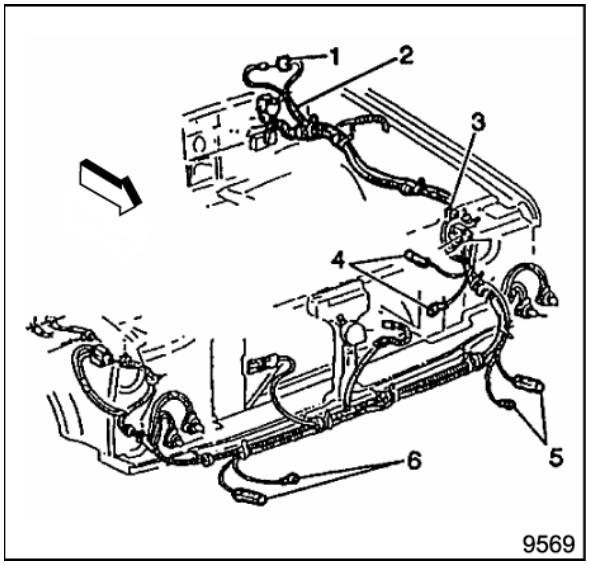
Removal Procedure

1. Remove the radiator grille.
2. Remove the filler panel.
3. Trace the auxiliary harness connections to the original harness.

Caution: Refer to Battery Disconnect Caution in Cautions and Notices.

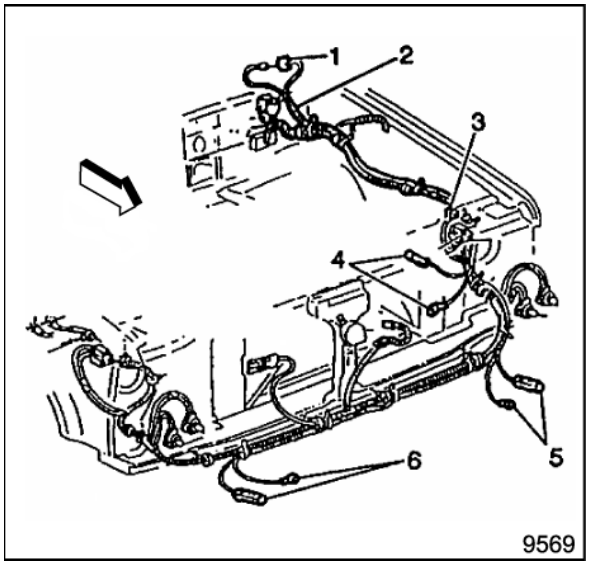
4. Disconnect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure in Engine Electrical.

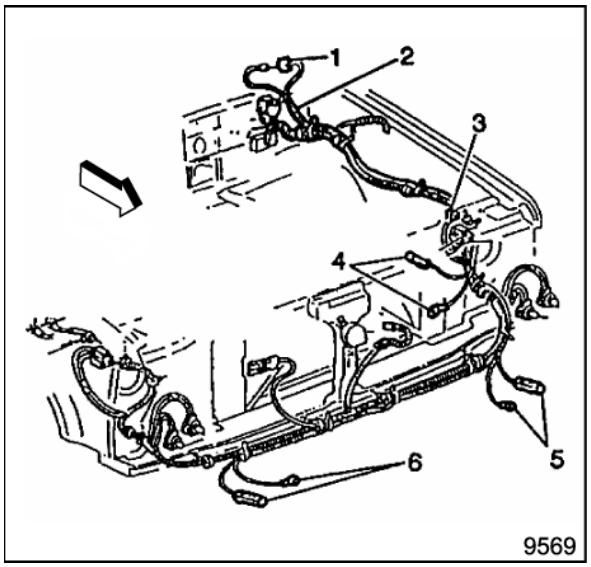
5. Remove the connector from the right hand (6) and left hand (5) blackout (B/O) marker lamp.
6. Remove the nut to the ground lead and all wiring harness straps connecting the auxiliary harness.
7. Remove connector (4) and ground from blackout (B/O) headlamp mounting stud.
8. Trace the auxiliary harness under the washer fluid reservoir and remove the wiring harness straps along the fender interior.
9. Trace the auxiliary harness under the battery tray area and remove the wrap.
10. Remove the forward auxiliary harness (2) from the vehicle.
11. Remove the wiring harness straps near the bulkhead and disconnect the forward connector of the auxiliary harness from the auxiliary I/P harness connector.



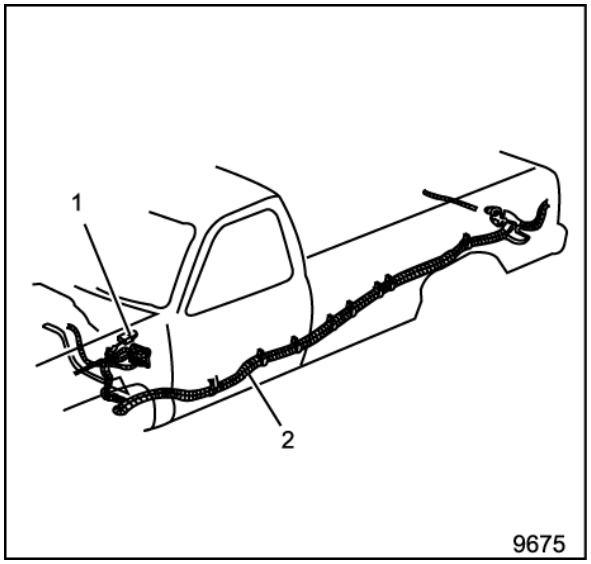
Installation Procedure

1. Connect the forward connector of the auxiliary harness to the auxiliary I/P harness connector and attach the tie-wraps.
2. Install the forward auxiliary harness (2) to the vehicle.
3. Install the auxiliary harness under the battery tray area and install the wiring harness straps.
4. Install the auxiliary harness under the washer fluid reservoir area and install the wiring harness straps along the fender interior.
5. Install the connector to the right hand (6) and left hand (5) blackout (B/O) marker lamp and the ground nut to the ground lead and all wiring harness straps connecting the auxiliary harness.





6. Install connector (4) and the ground to blackout (B/O) headlamp mounting stud.
7. Connect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure in Engine Electrical.
8. Install the filler panel.
9. Install the auxiliary harness connections to the original harness.
10. Install the radiator grille.



Auxiliary Lamp Extension Harness Replacement – Rear

Removal Procedure

Caution: Refer to Battery Disconnect Caution in Cautions and Notices.

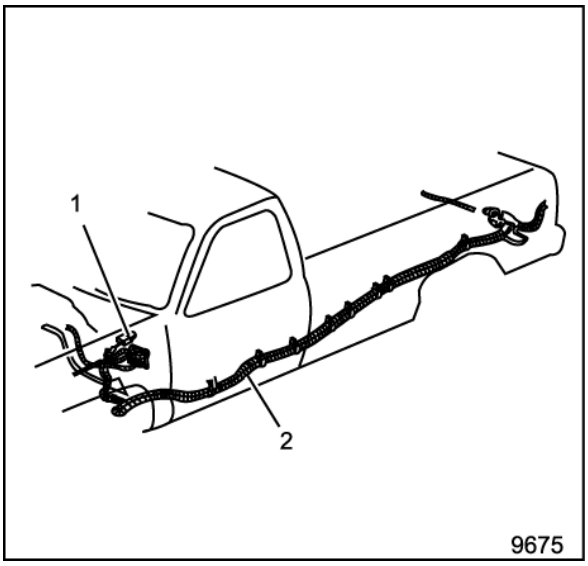
1. Disconnect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure in Engine Electrical.
2. Access the auxiliary rear lamp extension harness from the engine compartment at the left side of the bulkhead.
3. Remove the connector (1) from the I/P auxiliary harness and wiring harness straps (2) connecting to the forward lamp harness.

Caution: Refer to Vehicle Lifting Caution in Cautions and Notices.

4. Raise and support the vehicle on a hoist.
5. Trace the auxiliary rear lamp harness extension along the path of the existing harness and vehicle frame.
6. Remove the connector to the rear lamp harness.

Installation Procedure

1. Install the connector to the rear lamp harness.
2. Install the auxiliary rear lamp harness extension along the path of the existing harness and vehicle frame.
3. Remove supports and lower the vehicle.
4. Install the connector (1) to the I/P auxiliary harness and wiring harness straps (2) holding to the forward lamp harness.
5. Install the auxiliary rear lamp extension harness to the engine compartment location at the left side of the bulkhead.
6. Connect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure in Engine Electrical.

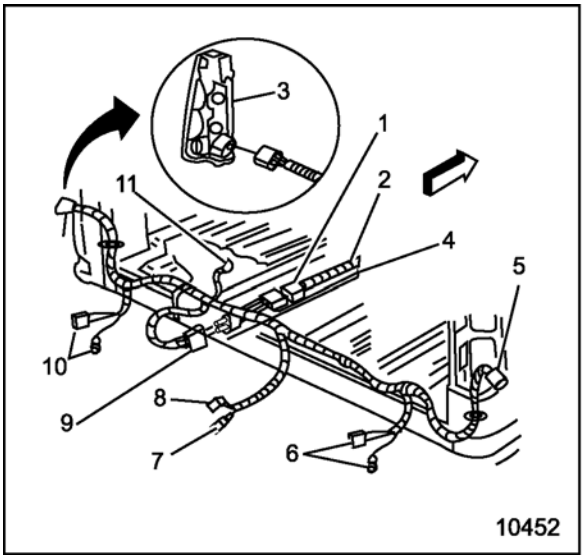


Lamp Harness Replacement – Rear

Removal Procedure

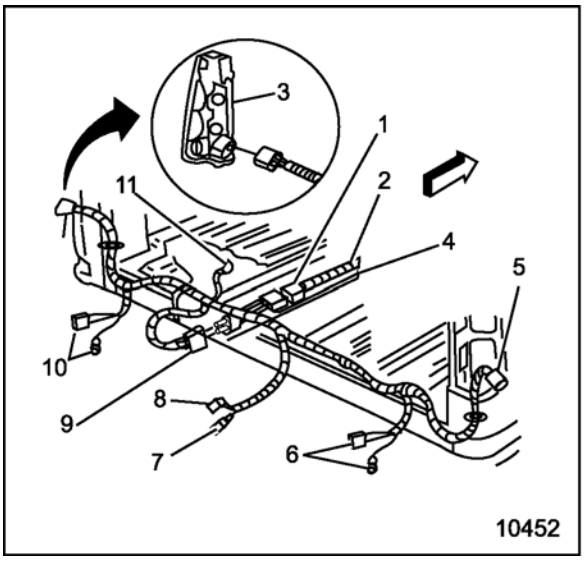
Caution: Refer to Battery Disconnect Caution in Cautions and Notices.

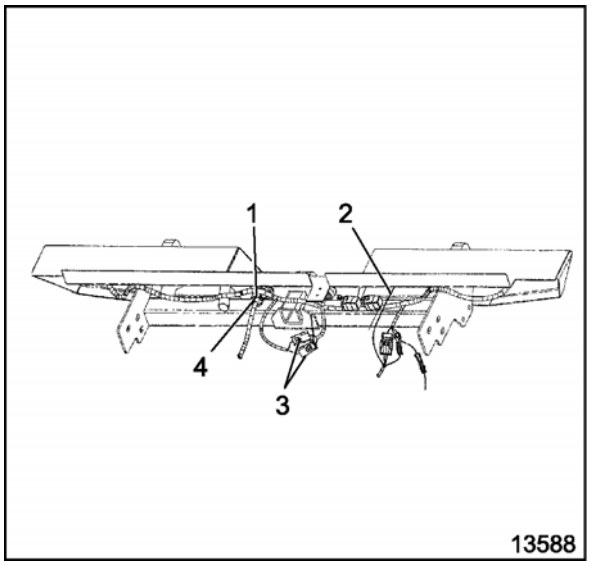
1. Disconnect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure in Engine Electrical.
2. Remove the rear lamp harness connector from the taillamp connector.
3. Remove the ground lead and connector for the blackout (B/O) marker lamp.
4. Remove the vehicle ground lead bolt, washer and harness ground.
5. Remove the rear lamp harness connector from the auxiliary rear lamp extension harness.
6. Remove the rear lamp harness connector from the rear lamp extension harness.
7. Remove the 2 rear lamp harness connectors (7, 8) from the trailer jumper.



Installation Procedure

1. Install the rear lamp harness connector to the taillamp connectors.
2. Install the ground lead nut, ground lead and connector to the blackout (B/O) marker lamp.
3. Install the two-rear lamp harness connectors (7, 8) to the trailer jumper.
4. Install the rear lamp harness connector to the auxiliary rear lamp extension harness.
5. Install the vehicle ground lead bolt, washer and harness ground.
6. Connect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure in Engine Electrical.



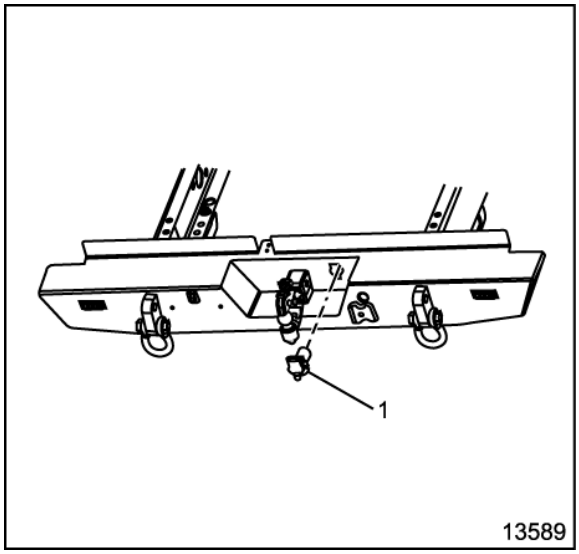


Commercial Trailer Connector Replacement

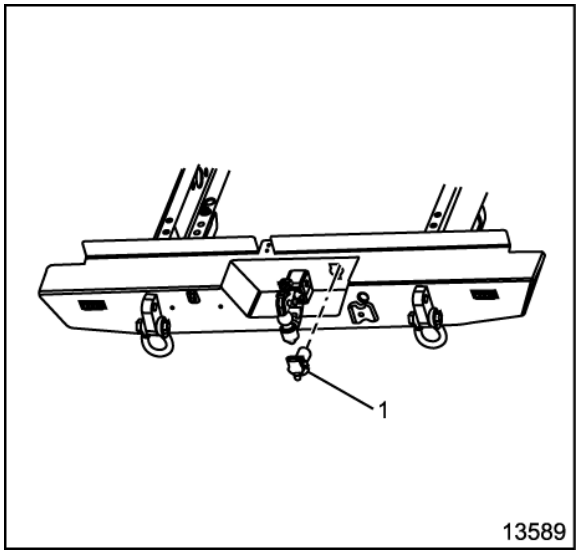
Removal Procedure

Caution: Refer to Battery Disconnect Caution in Cautions and Notices.

1. Disconnect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure in Engine Electrical.
2. Disconnect the harness connector (4) from the trailer connectors (1).



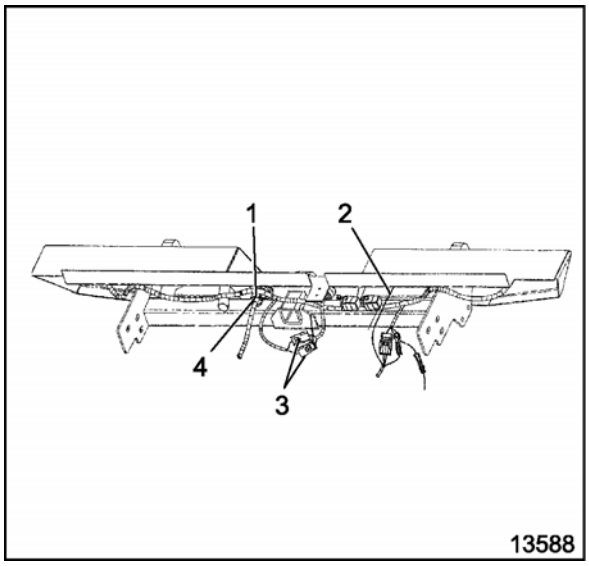
3. Release the lock table, turn the trailer connector (1) and pull out from the bumper.



Installation Procedure

1. Install the trailer connector (1) into the opening in bumper.
2. Turn the connector until lock tabs engage.

3. Connect the harness connector (4) into the trailer lamp connector (1).
4. Connect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure in Engine Electrical.

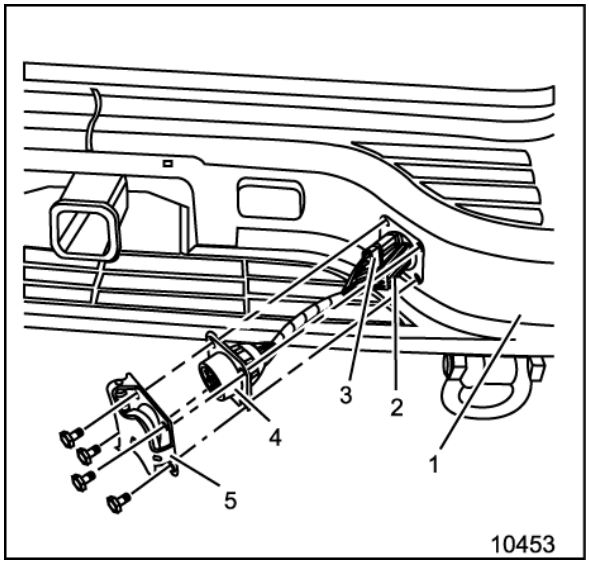


Military Trailer Connector Replacement (Factory Bumper)

Removal Procedure

Caution: Refer to Battery Disconnect Caution in Cautions and Notices.

1. Disconnect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure in Engine Electrical.
2. Disconnect the trailer harness connectors (2, 3).
3. Remove the fasteners securing the connector to the trailer hitch.
4. Remove the cover (5) and trailer connector (4).



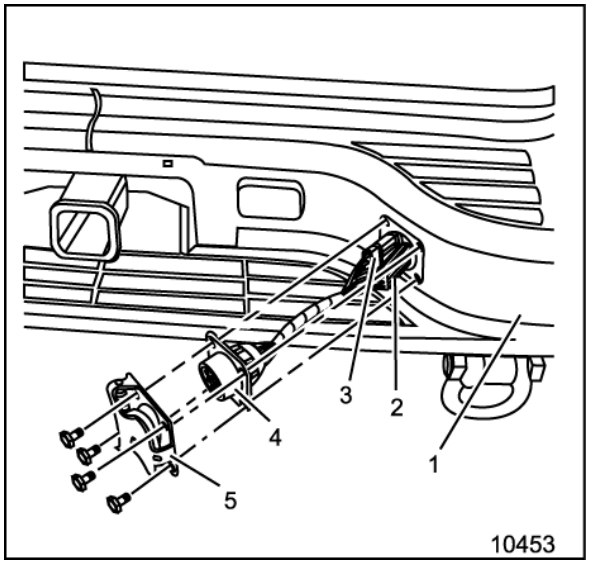
Installation Procedure

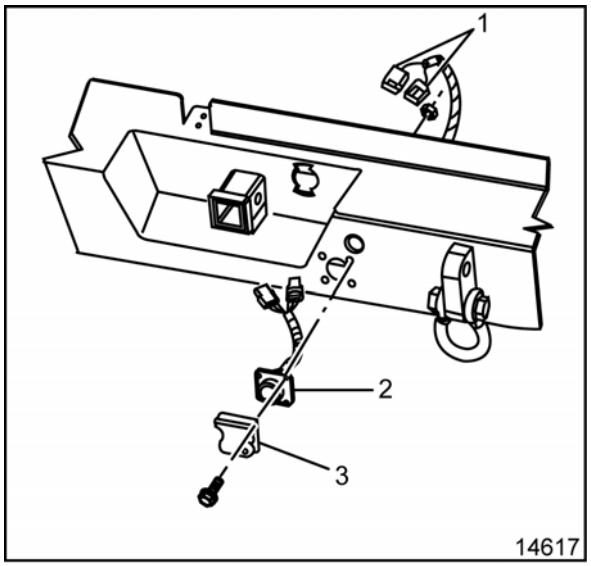
Note: Connector harness depression is positioned at 3 o'clock.

1. Install the trailer connector (4) and cover (5) onto the trailer hitch.

Notice: Refer to Fastener Notice in Cautions and Notices.

2. Install the fasteners to secure the cover and connector to the bumper.
   Tighten
   Tighten connector bolts to 5 N•m (44 lb in).
3. Connect the harness connectors (2, 3).
4. Connect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure in Engine Electrical.



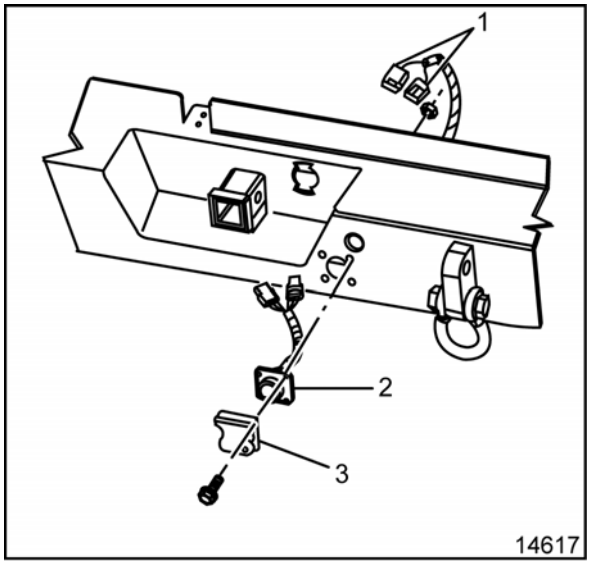


Military Trailer Connector Replacement

Removal Procedure

Caution: Refer to Battery Disconnect Caution in Cautions and Notices.

1. Disconnect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure in Engine Electrical.
2. Disconnect the trailer harness connectors (1).
3. Remove the fasteners securing the connector to the bumper.
4. Remove the cover (3) and trailer connector (2).

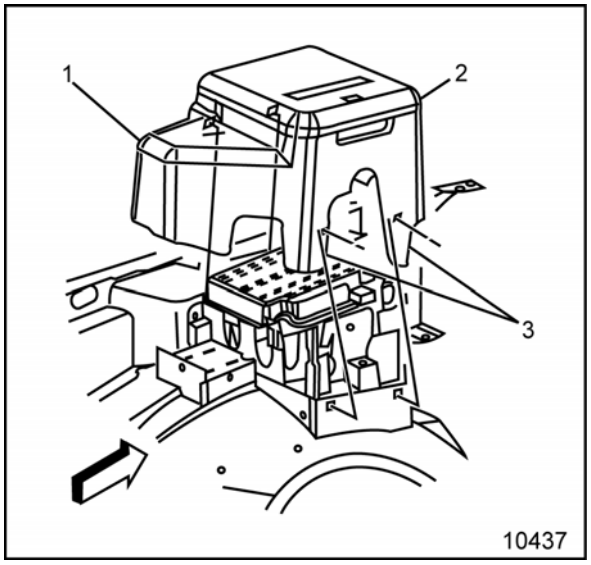


Installation Procedure

1. Install the trailer connector (2) and cover (3) onto the bumper.

Notice: Refer to Fastener Notice in Cautions and Notices.

2. Install the fasteners to secure the cover and connector to the bumper.
   Tighten
   Tighten connector bolts to 5 N•m (44 lb in).
3. Connect the harness connectors (1).
4. Connect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure in Engine Electrical.



Relay Mounting Bracket Replacement

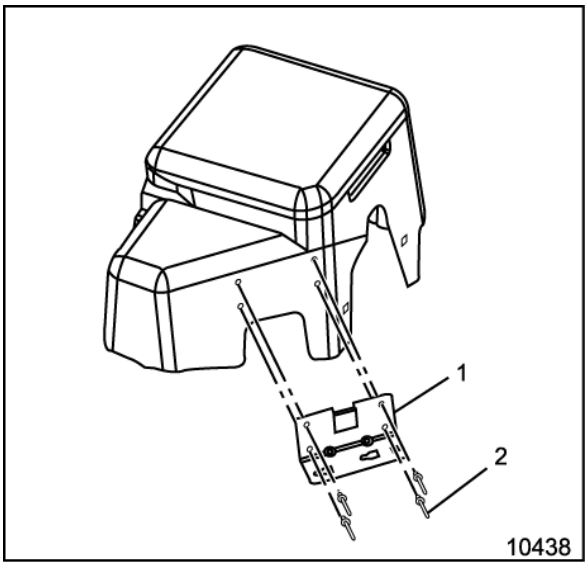
Removal Procedure

Caution: Refer to Battery Disconnect Caution in Cautions and Notices.

1. Disconnect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure in Engine Electrical.
2. Remove the left fender upper brace.
3. Remove top cover (2).
4. Remove the electrical center cover assembly (1) by lifting the cover outwards to clear the tabs (3).
5. Remove the vehicle load disconnect switch (if equipped). Refer to Vehicle Load Disconnect Switch Replacement in Engine Electrical.

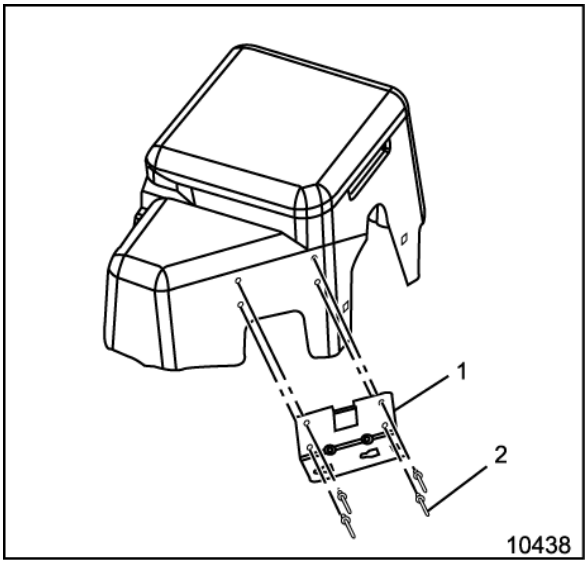
Caution: Refer to Eye Protection Caution in Cautions and Notices.

6. Drill out the rivets (2) and remove bracket (1).



Installation Procedure

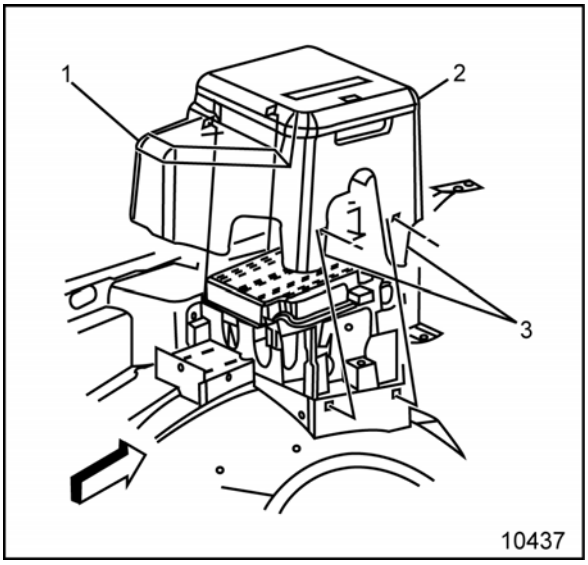
1. Rivet the bracket (1) to the electrical center cover.
2. Install the vehicle load disconnect switch (if equipped). Refer to Vehicle Load Disconnect Switch Replacement in Engine Electrical.

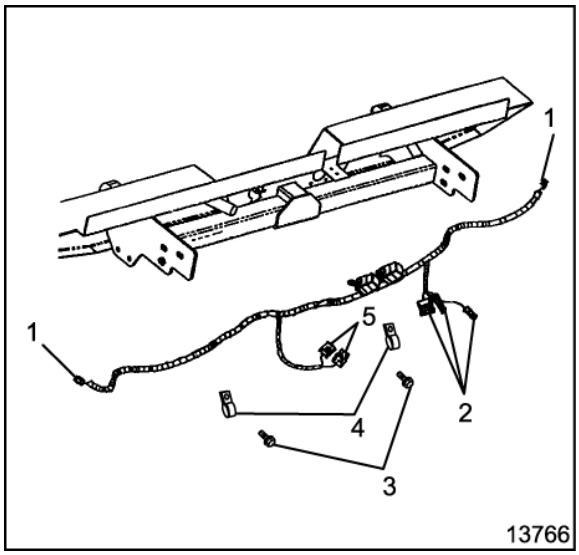


3. Set the electrical center block in its resting position until the tabs (3) lock into place.
4. Install the electrical center cover assembly (1).
5. Install the top cover (2).
6. Install the fender upper brace.

Notice: Refer to Fastener Notice in Cautions and Notices.

7. Install the upper brace fasteners.
   Tighten
   Tighten the fasteners to 25 N•m (18 lb ft).
8. Connect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure in Engine Electrical.



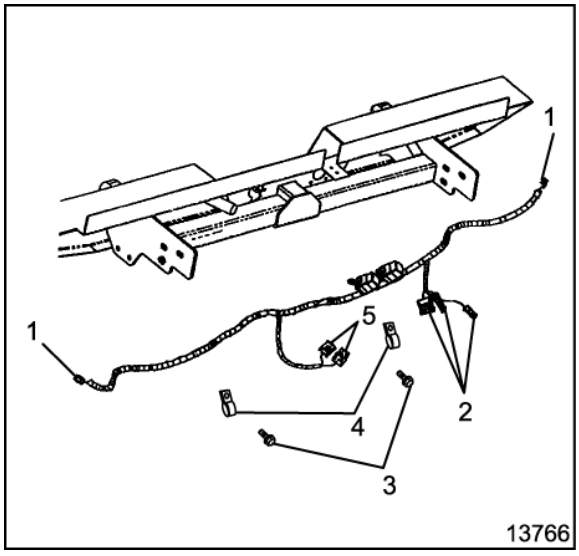


Blackout (B/O) and Trailer Harness Replacement – Rear

Removal Procedure

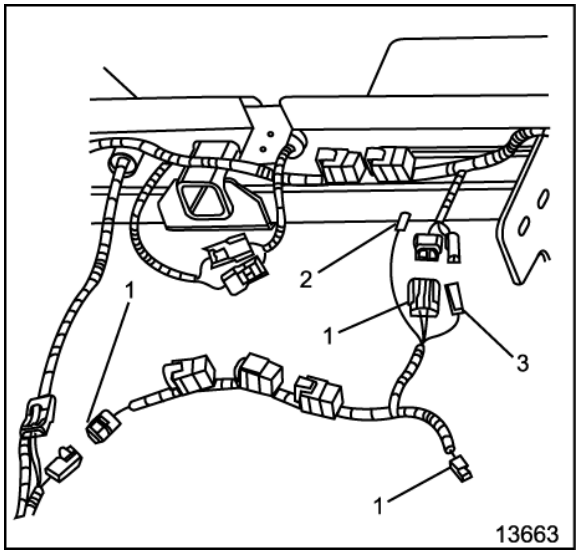
Caution: Refer to Battery Disconnect Caution in Caution and Notices.

1. Disconnect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure in Engine Electrical.
2. Disconnect the 2, 24V trailer harness connectors (5) from the 24V trailer connector harness.
3. Disconnect the 3 blackout (B/O) and trailer harness connectors (2).
4. Disconnect the 2 blackout (B/O) marker lamp connectors (1) from the blackout (B/O) marker lamps.
5. Remove the 2 bolts (3) and 2 clamps (4) from the blackout (B/O) and the trailer harness.
6. Remove the blackout (B/O) and the trailer harness from the bumper assembly.



Installation Procedure

1. Position the blackout (B/O) and the trailer harness onto the bumper in the same routing location as removed.
2. Install the 2 clamps (4) and the 2 bolts (3) to the blackout (B/O) and trailer harness.
3. Connect the 2 blackout (B/O) marker lamp connectors (1) to the blackout (B/O) marker lamps.
4. Connect the 3 blackout (B/O) and the trailer harness connectors (2).
5. Connect the 2, 24V trailer harness connectors (5) to the 24V trailer harness.
6. Connect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure in Engine Electrical.



12V and 24V Harness Replacement

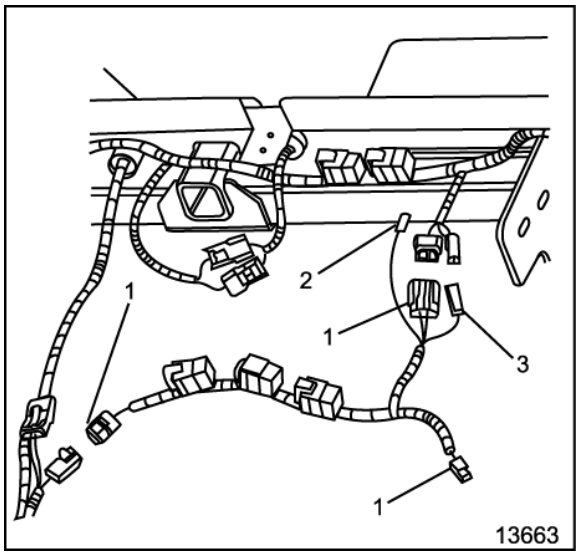
Removal Procedure

Caution: Refer to Battery Disconnect Caution in Caution and Notices.

1. Disconnect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure in Engine Electrical.
2. Disconnect the 12V and the 24V harness connector (1) from the blackout (B/O) and the trailer harness connectors.
3. Disconnect the license plate lamp connector (2) from the license plate lamp.
4. Disconnect the blackout (B/O) connector (3) from the blackout (B/O) and trailer harness connector.
5. Remove the 12V to 24V harness from the vehicle.

Installation Procedure

1. Install the 12V to 24V wiring harness in the same routing location as removed.
2. Connect the blackout (B/O) connector (3) from the 12V and 24V harness to the blackout (B/O) and trailer harness connector.
3. Connect the license plate lamp connector (2) from the 12V to 24V harness to the license plate lamp.
4. Connect the 12V to 24V harness connector (1) to the blackout (B/O) and the trailer harness connector.
5. Connect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure in Engine Electrical.

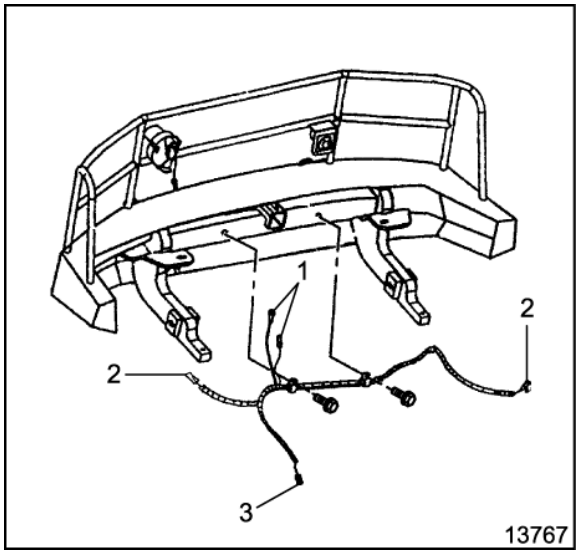


Blackout (B/O) Lamp Wiring Harness – Front

Removal Procedure

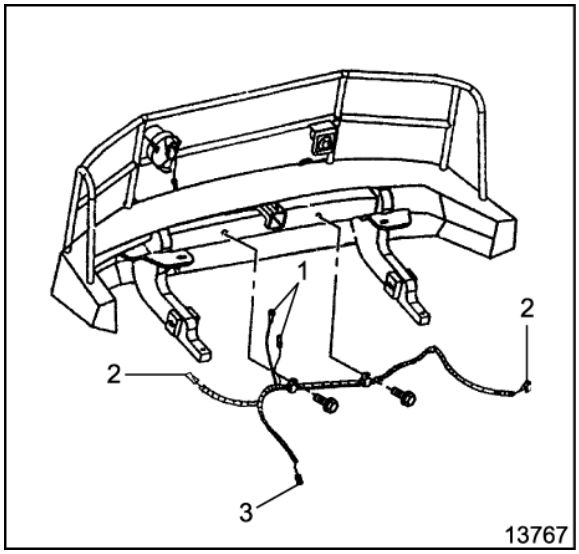
Caution: Refer to Battery Disconnect Caution in Caution and Notices.

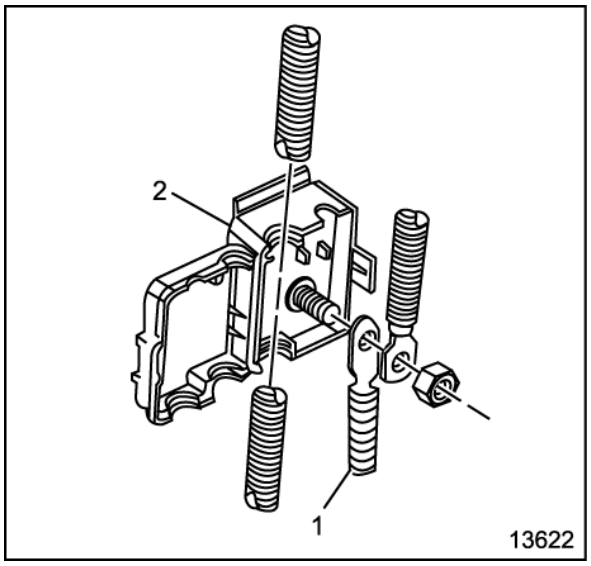
1. Disconnect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure in Engine Electrical.
2. Disconnect the blackout (B/O) headlamp connectors (1) from the blackout (B/O) headlamp.
3. Disconnect the blackout (B/O) marker lamp connectors (2) from the blackout (B/O) marker lamp.
4. Trace the blackout (B/O) lamp harness connector (3) to the main harness connector.
5. Disconnect the blackout (B/O) lamp harness connector (3) to the main harness connector.
6. Remove the wiring harness from the vehicle. Note wiring harness routing for installation.



Installation Procedure

1. Position the blackout (B/O) lamp wiring harness onto the vehicle in the same routing location as removed.
2. Connect the blackout (B/O) lamp harness connector (3) to the main harness connector.
3. Connect the blackout (B/O) marker lamp connectors (2) to the blackout (B/O) marker lamps.
4. Connect the blackout (B/O) headlamp connectors (1) to the blackout (B/O) headlamp.
5. Connect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure in Engine Electrical.



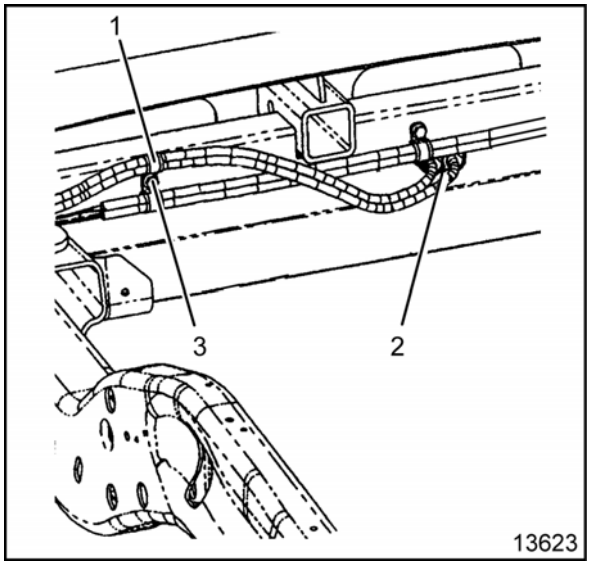


Winch Connector/Harness Replacement – Front

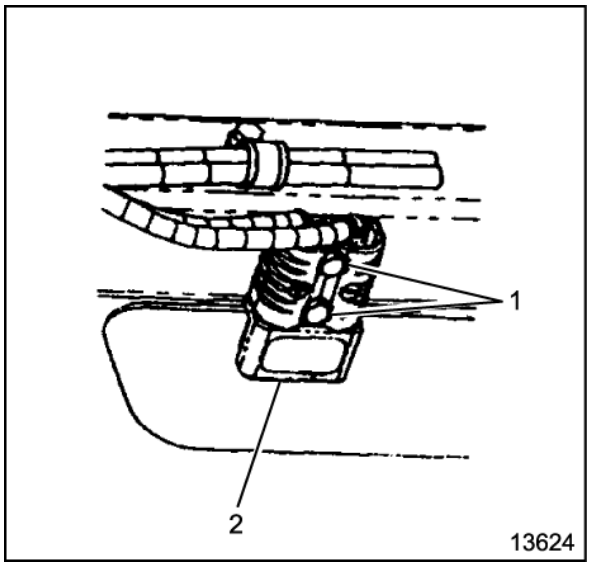
Removal Procedure

Caution: Refer to Battery Disconnect Caution in Caution and Notices.

1. Disconnect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure in Engine Electrical.
2. Remove the positive cable (1) from the junction block (2).



3. Remove the negative cable from the engine block.
4. Remove any wiring harness straps securing the cable to the vehicle.
5. Remove the bolt (3) and clamp (1) from the connector/harness (2).



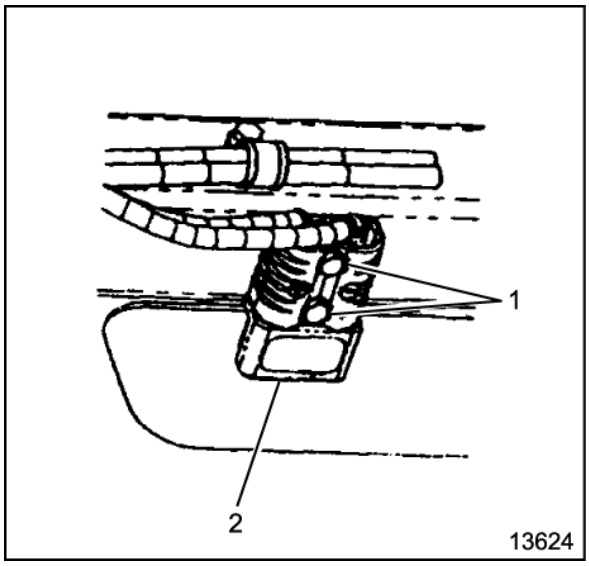
6. Remove the bolts (1) from the winch connector (2). Note cable routing for installation
7. Remove connector/harness from vehicle.

Installation Procedure

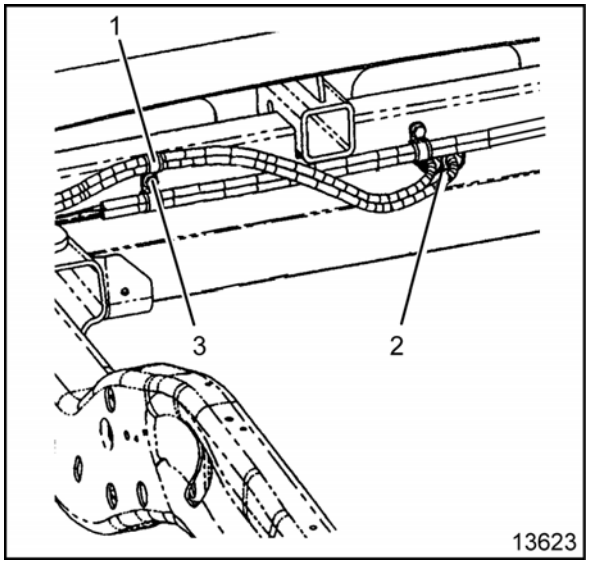
1. Install connector/harness to the vehicle in the same routing as removed.

Notice: Refer to Fastener Notice in Cautions and Notices.

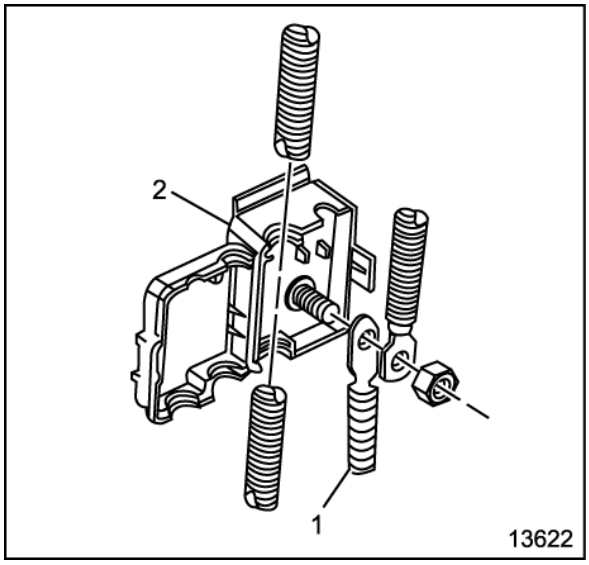
2. Position the connector (2) on the bumper and install bolts (1).
   Tighten
   Tighten the connector bolts to 5-8 N•m (44-71 lb in).

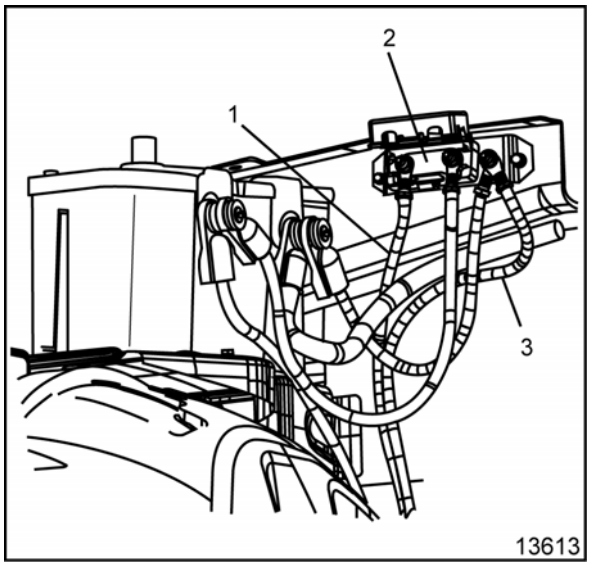


3. Install the clamp (1) onto the cables.
4. Install the bolt (3) securing clamp to bumper.
   Tighten
   Tighten the clamp bolt to 18-29 N•m (13-21 lb ft).



5. Install the negative cable to the engine and the fastening bolt.
   Tighten
   Tighten the negative cable bolt to 34 N•m (25 lb ft).
6. Install the positive cable (1) to the junction block (2).
   Tighten
   Tighten the junction block nut to 9 N•m (80 lb in).
7. Install connector/harness to vehicle in original location using wiring harness straps.
8. Connect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure in Engine Electrical.



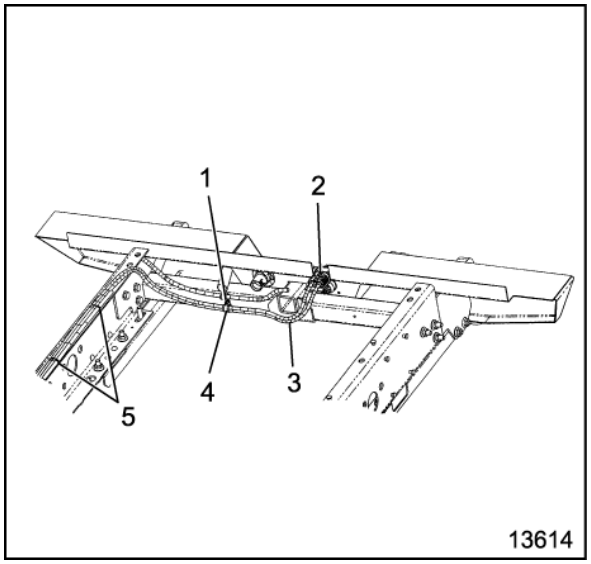


Winch Connector/Harness Replacement – Rear

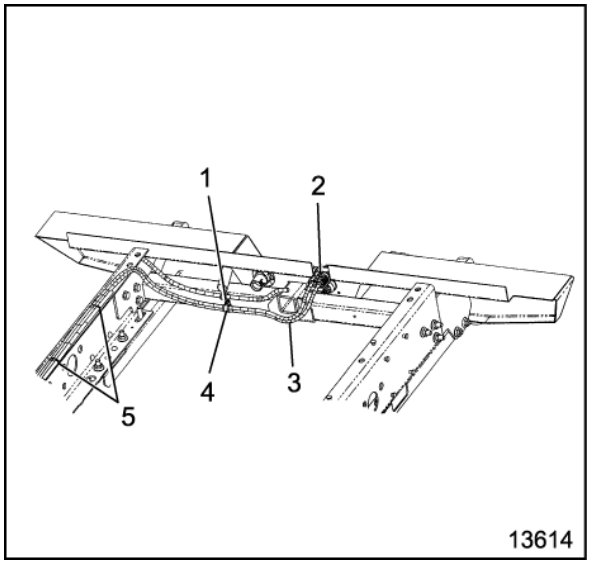
Removal Procedure

Caution: Refer to Battery Disconnect Caution in Caution and Notices.

1. Disconnect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure in Engine Electrical.
2. Remove the negative cable (3) from the junction block (2).
3. Remove the positive cable (1) from the junction block (2).



4. Remove the wiring harness straps securing the cable. Note cable routing for installation.
5. Remove the clamp bolt (1) and clamp (4) from cable.
6. Remove the bolt (2) securing cable connector to the bracket.
7. Remove the cable (3) from the vehicle.



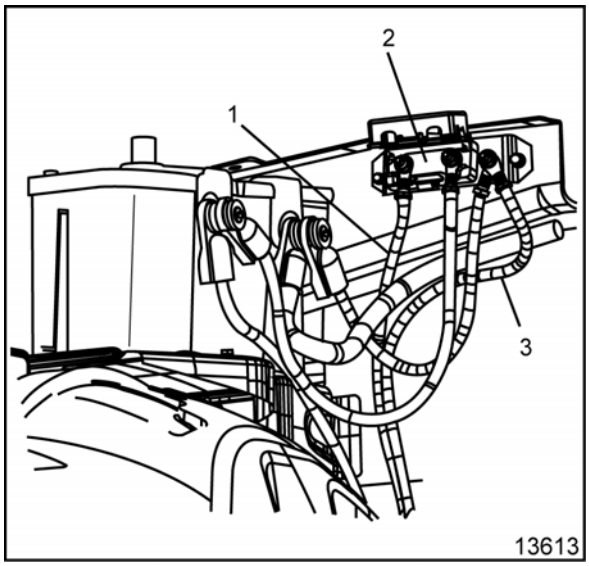
Installation Procedure

1. Install the cable (3) onto the vehicle in the same location as removed.

Notice: Refer to Fastener Notice in Cautions and Notices.

2. Install the connector onto the bracket and secure with bolt (2).
   Tighten
   Tighten the connector bolt to 5-8 N•m (44-71 lb in).
3. Install the clamp (4) and secure with bolt (1).
   Tighten
   Tighten clamp bolt to 18-29 N•m (13-21 lb ft).
4. Working from the rear to the front of the vehicle install the wiring harness straps (5).

5. Install the positive cable (1) to the junction block (2).
6. Install the negative cable (3) to the junction block (2).
   Tighten
   Tighten junction block nuts to 9 N•m (80 lb in).
7. Connect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure in Engine Electrical.

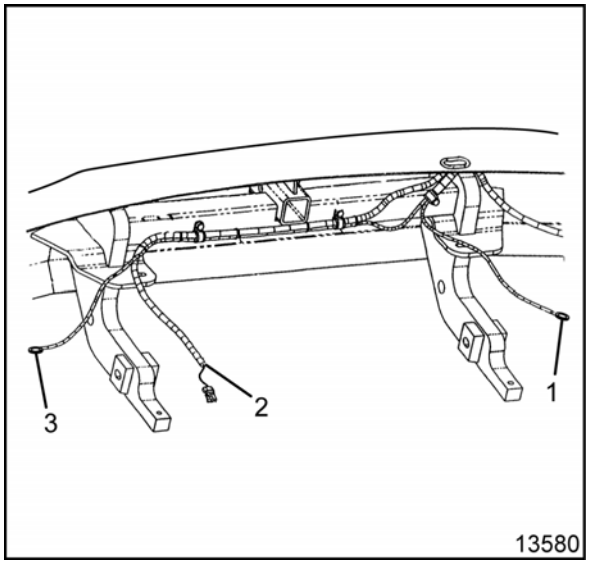


Slave Receptacle Harness Replacement

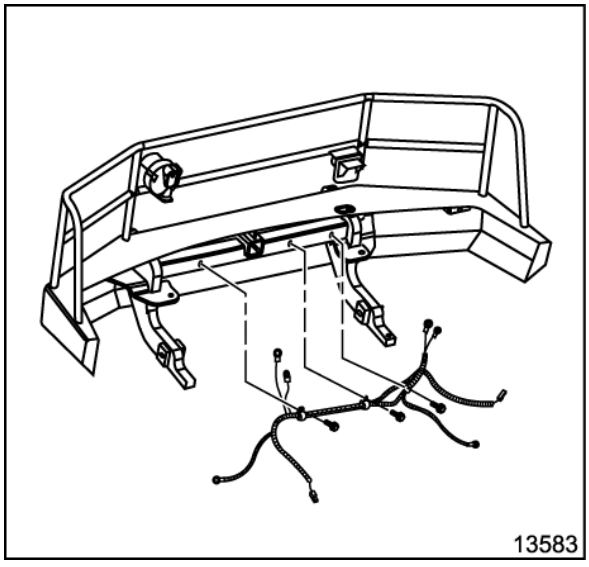
Removal Procedure

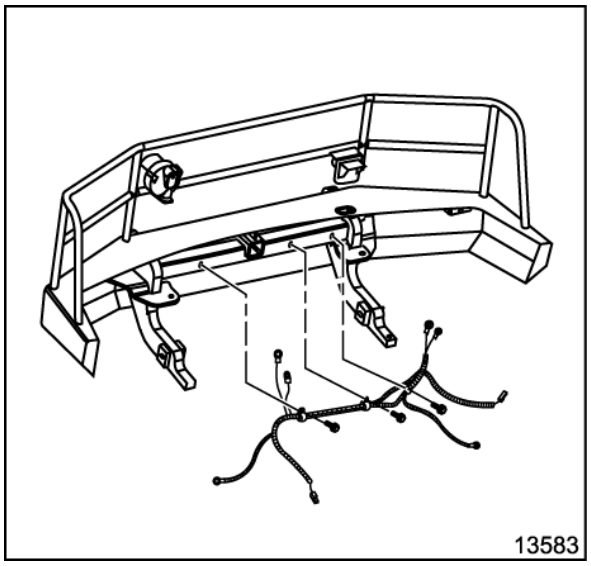
Caution: Refer to Battery Disconnect Caution in Cautions and Notices.

1. Disconnect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure in Engine Electrical.
2. Trace the negative slave receptacle cable (1) to the cable ground connection.
3. Disconnect the negative slave receptacle ground cable from the ground connection.
4. Trace the positive slave receptacle cable (3) to the 24V battery connection.
5. Disconnect the positive slave receptacle cable (3) from the 24V battery connection.



6. Disconnect the slave receptacle connectors from the slave receptacle. Refer to Slave Receptacle Replacement in Bumpers.
7. Remove the fasteners from the clamps securing the slave receptacle harness and the blackout (B/O) harness.
8. Remove the slave receptacle harness from the bumper assembly.

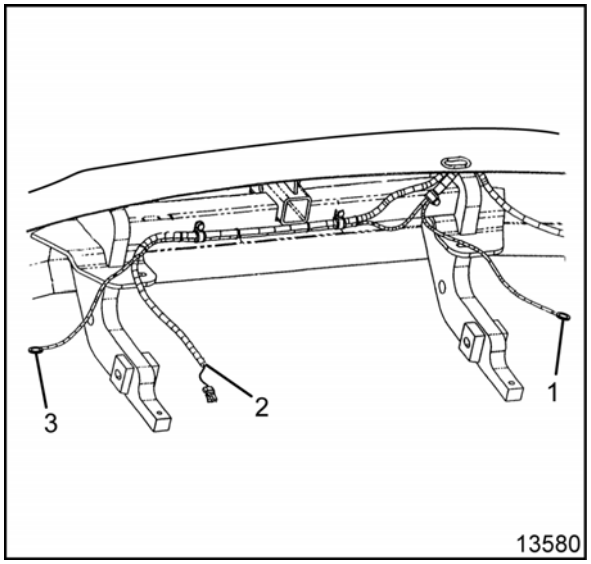




Installation Procedure

Notice: Verify all connections are clean prior to installation.

1. Position the slave receptacle harness onto the bumper assembly.
2. Install the 3 clamps and the fasteners onto the slave receptacle harness and the blackout (B/O) harness.
3. Connect the slave receptacle connectors to the slave receptacle. Refer to Slave Receptacle Replacement in Bumpers.
4. Install the positive slave receptacle cable in the same routing location as removed.



5. Connect the positive slave receptacle cable connector (3) to the 24V battery connection.
6. Install the negative slave receptacle cable in the same routing location as removed.
7. Connect the negative slave receptacle connector (1) to the cable ground connection.
8. Connect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure in Engine Electrical.

Description and Operation

Wiring Description

Several changes offered by the military options require new wiring configurations. Auxiliary wiring attaches to the original wiring providing power to the following items:

- Blackout (B/O) Lighting
- 24V System
- Power Converter
- Circuit Breakers and Relays
- Slave Receptacle
- Winch Prep Wiring

All auxiliary harnesses are outlined in schematics. Several are described in repair procedures in this manual.

Access to fuses can be found under the dash and under the hood or inline with the circuit.

BLANK

Lighting Systems

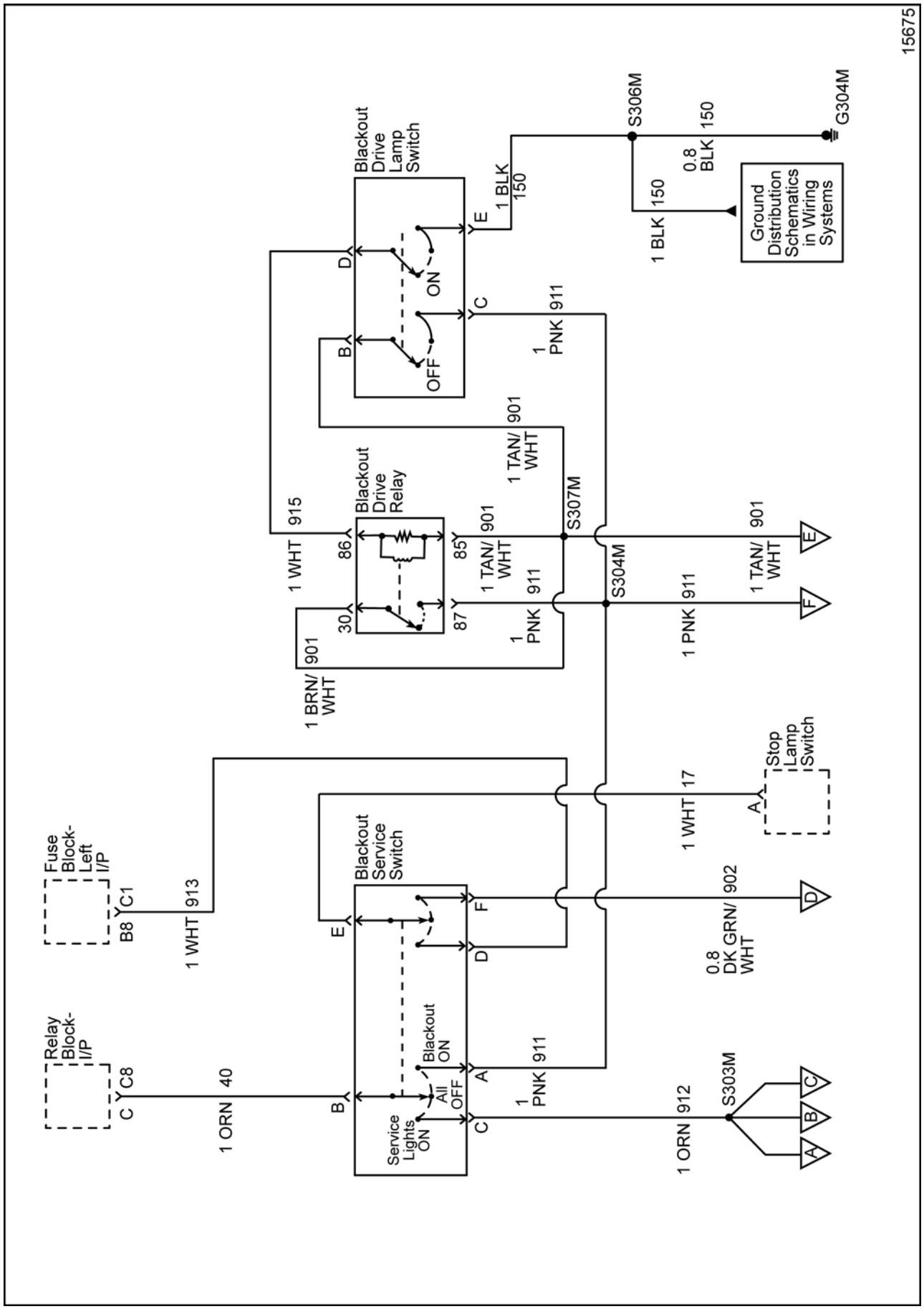
Specifications

Fastener Tightening Specifications

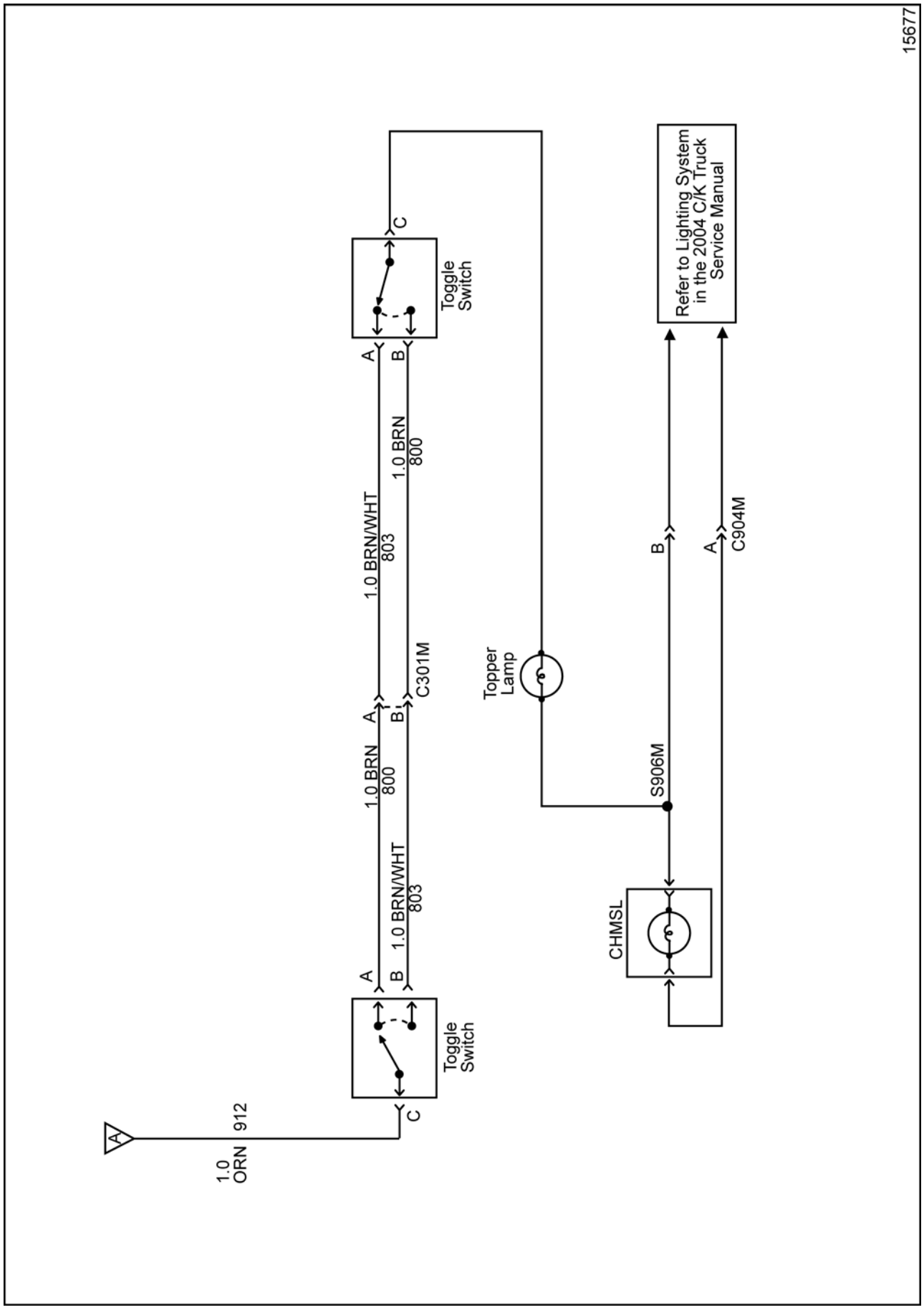
Application	Specification	
	Metric	English
Blackout (B/O) Headlamp Stud Nut	10 N•m	89 lb in
Front Blackout (B/O) Marker Lamp Nuts	2 N•m	18 lb in
Rear Blackout (B/O) Lamp Nuts	2 N•m	18 lb in
Taillamp Bracket to Bumper Nuts	27 N•m	20 lb ft

Schematic and Routing Diagrams

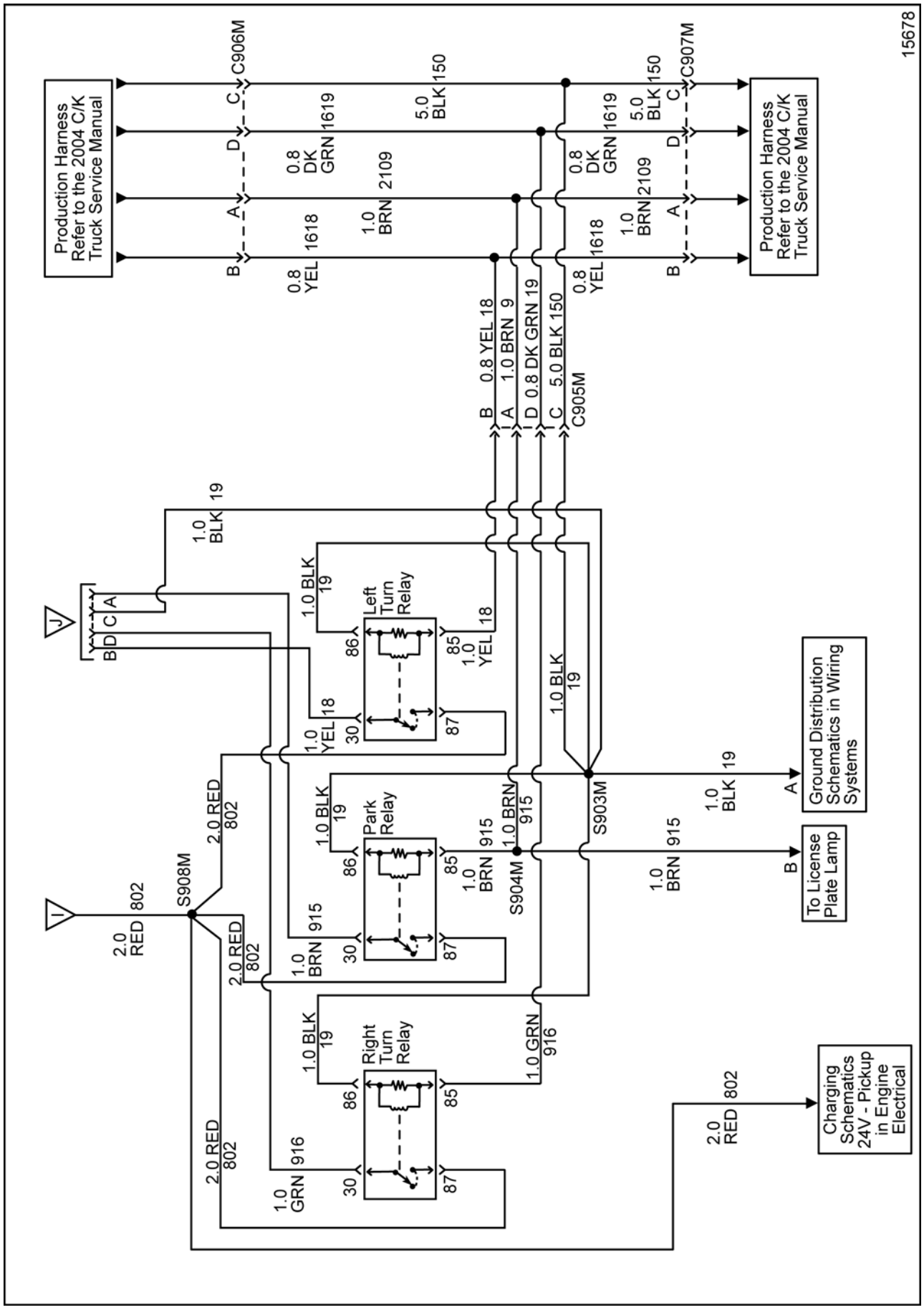
Blackout (B/O) Light Controls



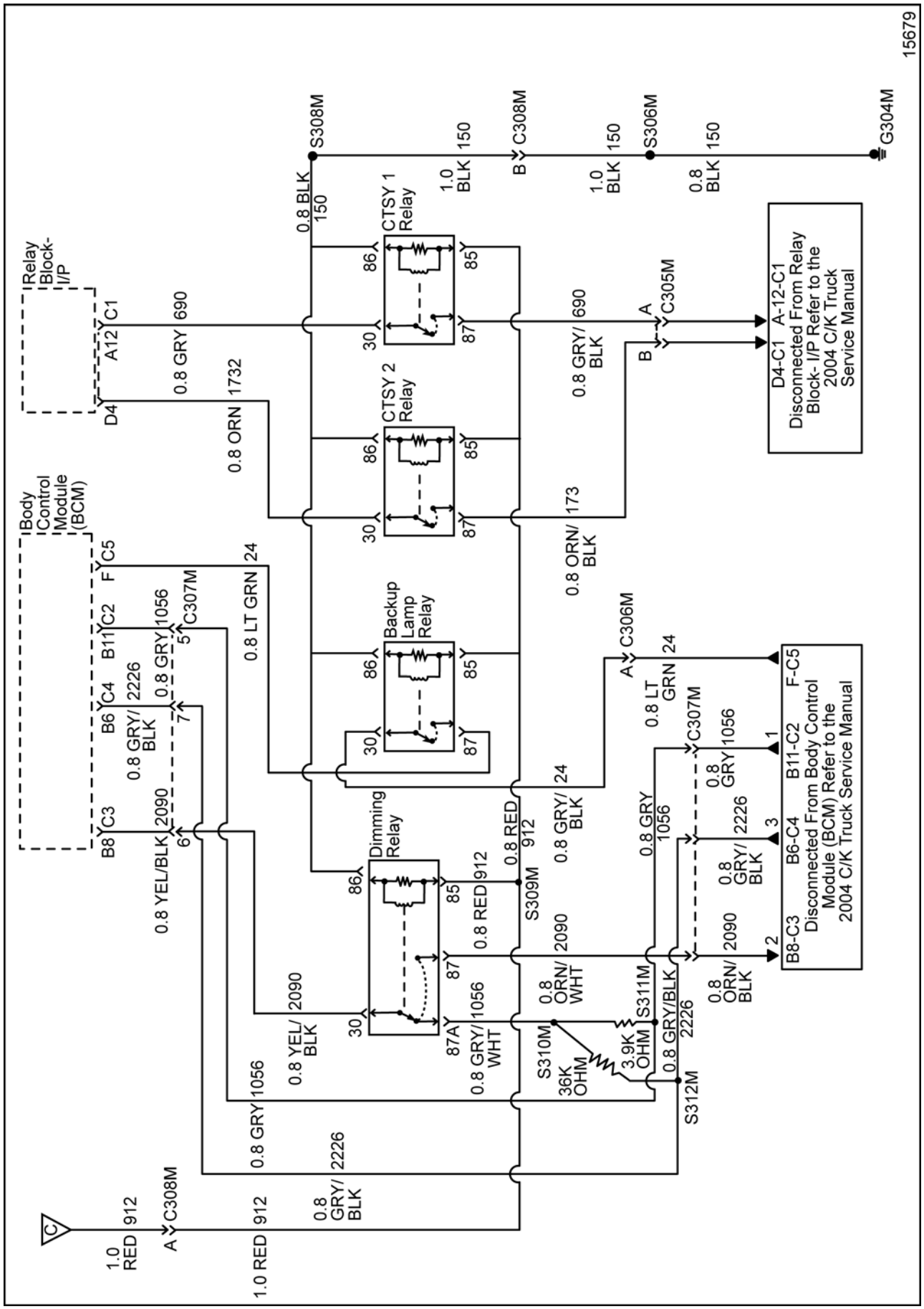
Topper Wiring – Pickup



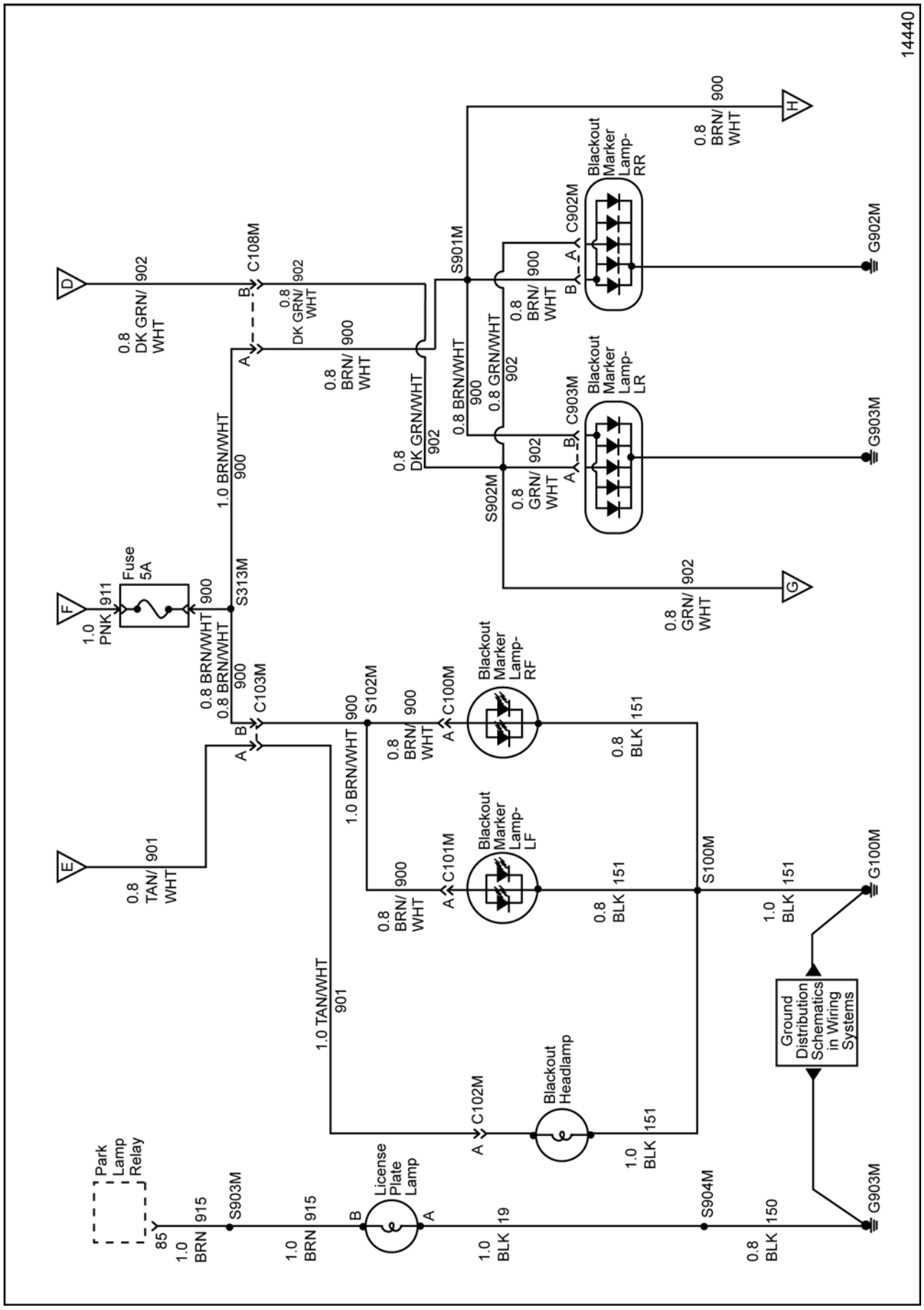
Relays (Underhood Fuse Block) – Pickup



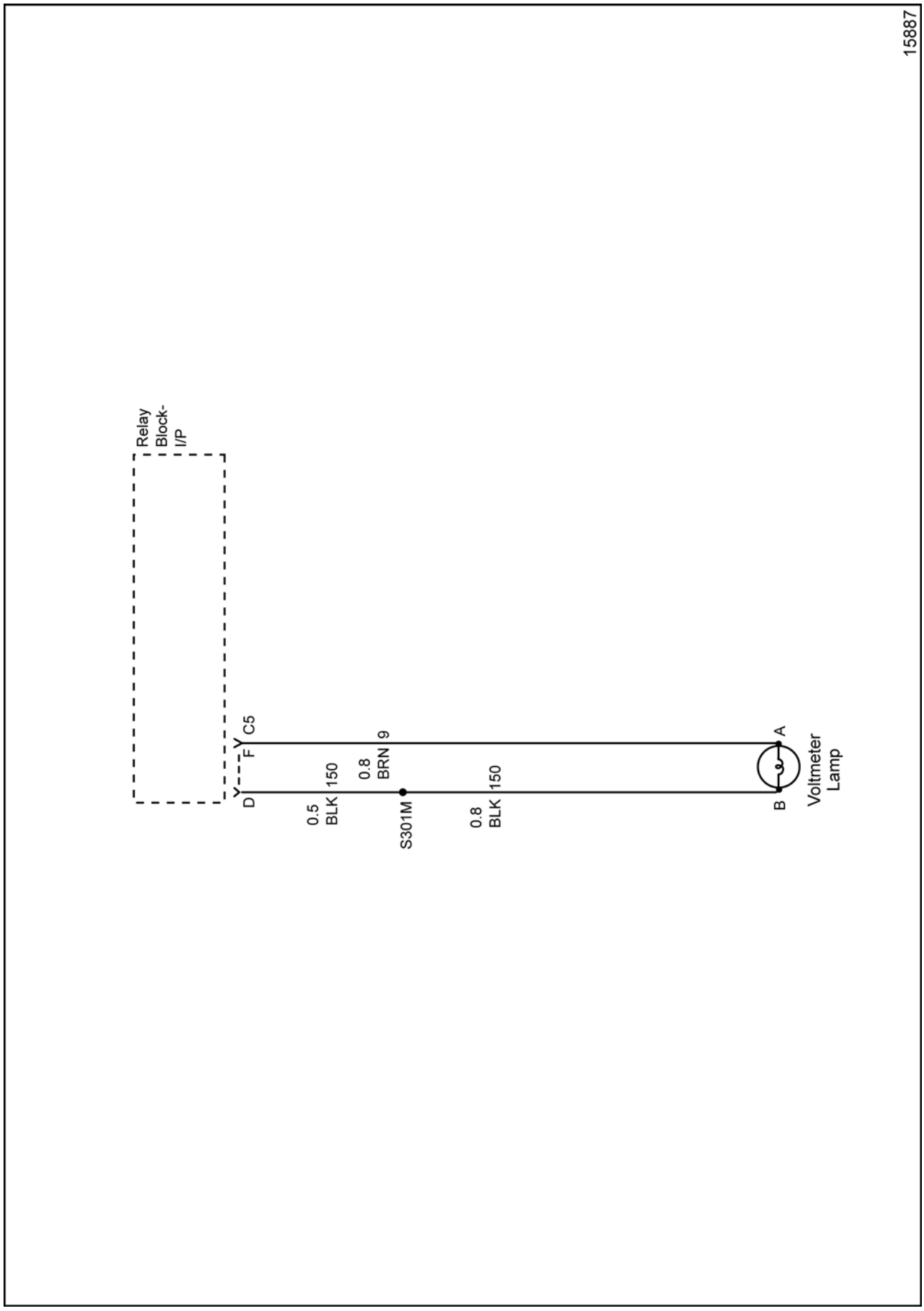
Interrupt Relays (I/P Fuse Block)



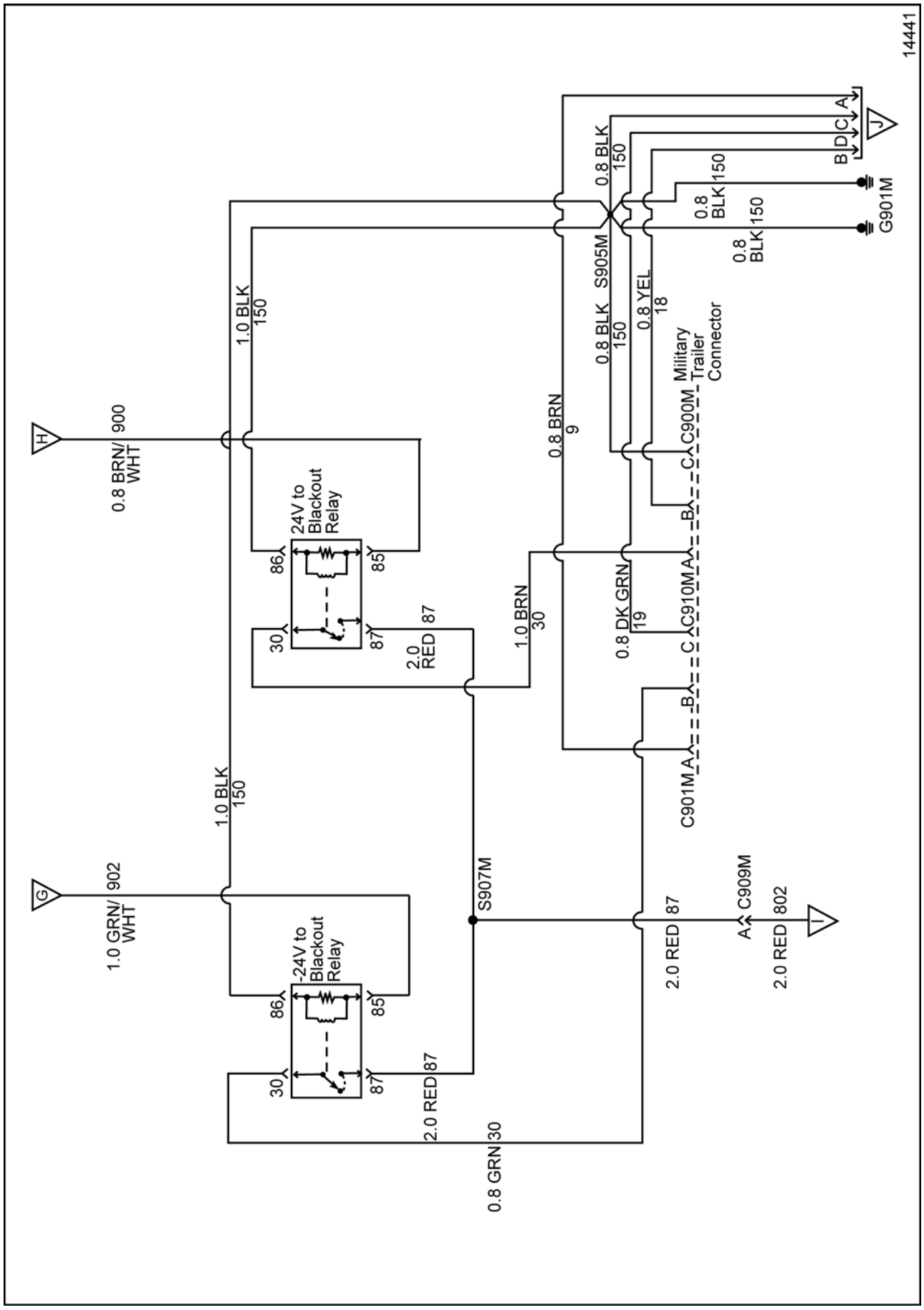
External Lighting



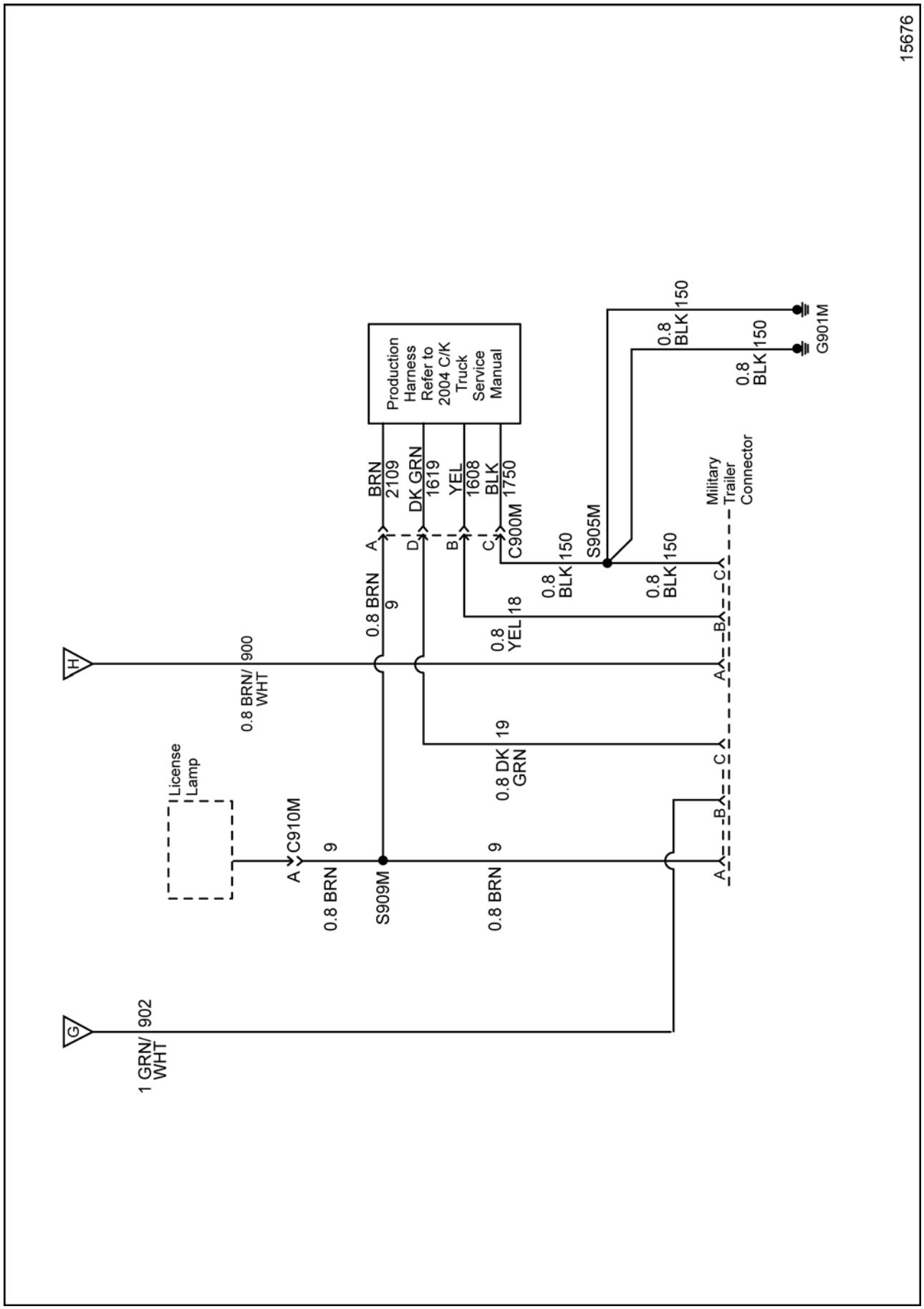
Interior Lighting



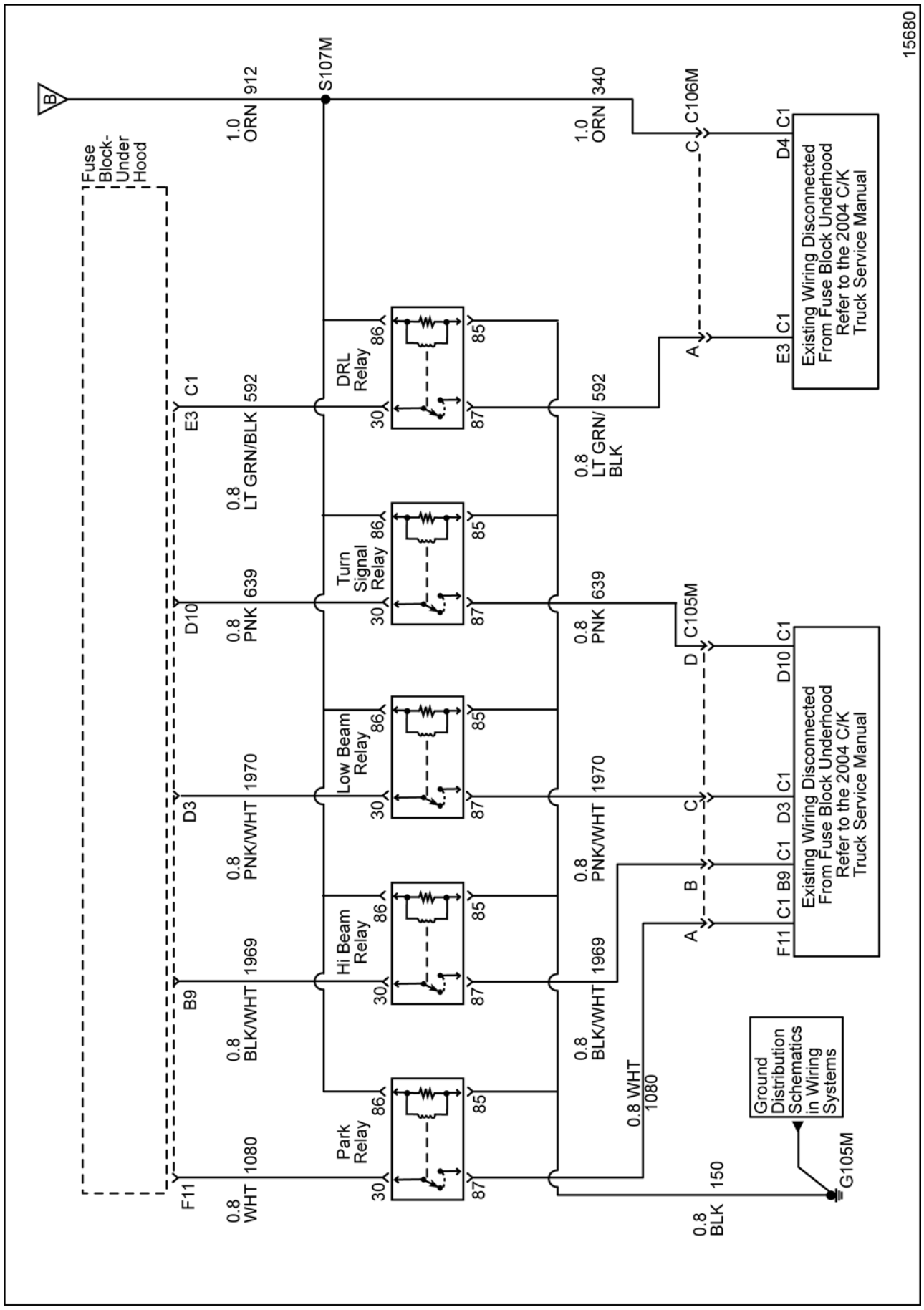
Trailer Wiring – Pickup



Trailer Wiring – Utility



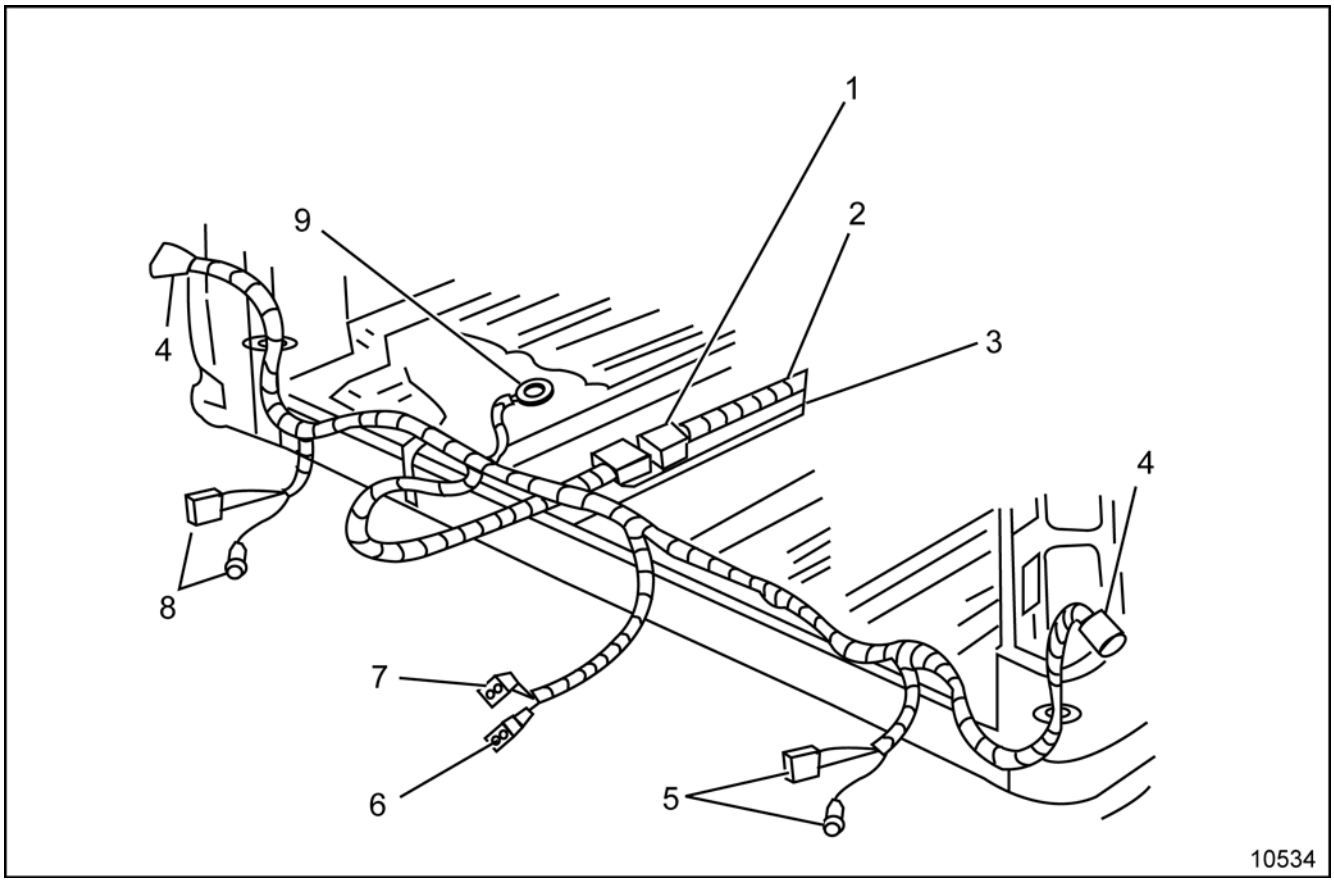
Rear Relay Harness



Component Locator

Lighting Systems Component Views

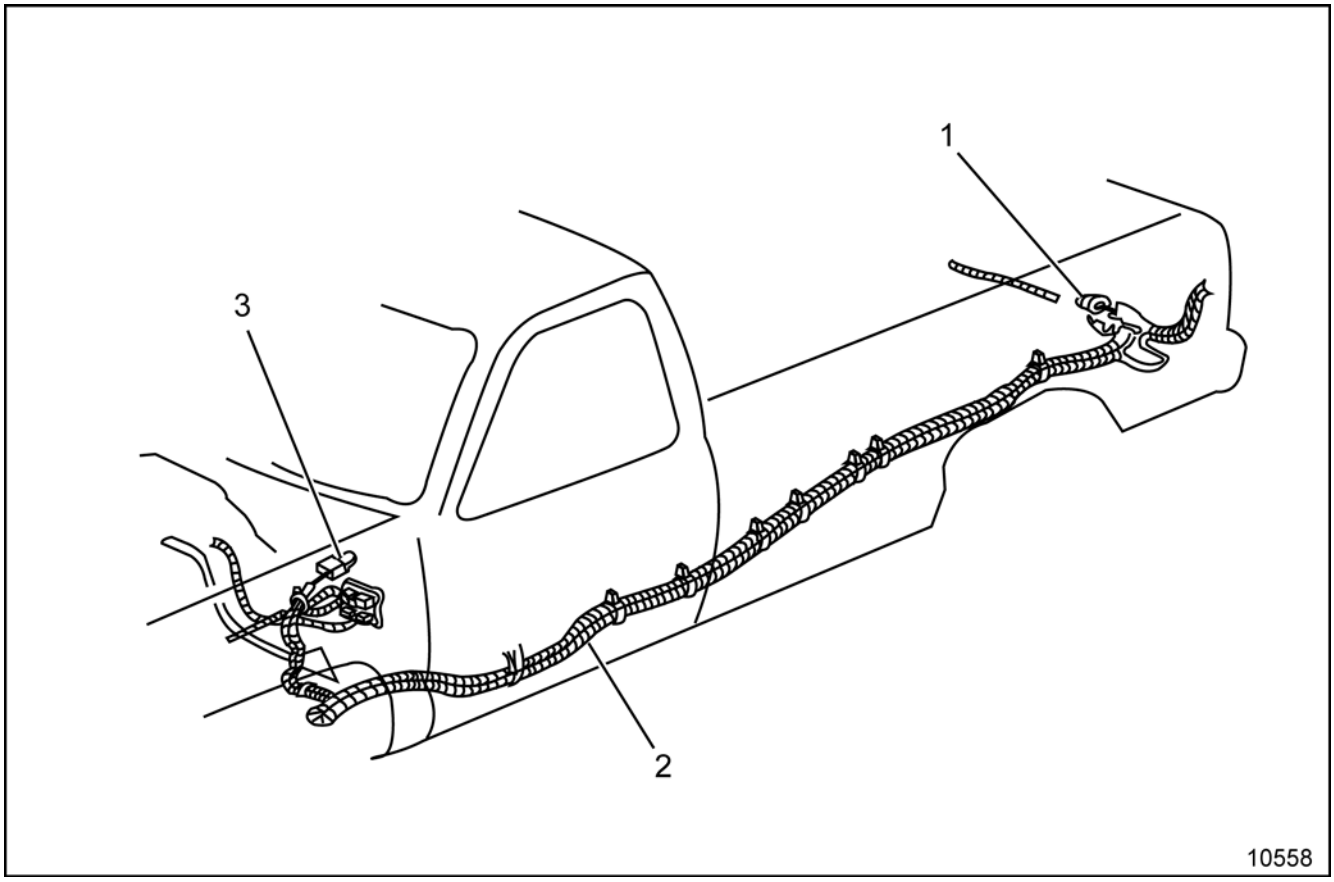
Rear Lamp Harness



Legend

(1) C908M
(2) Auxiliary Rear Lamp Extension Harness
(3) Rear of Vehicle
(4) Taillamp
(5) To Blackout (B/O) Marker Lamp, RH
(6) Military Trailer Connector
(7) Military Trailer Connector
(8) To Blackout (B/O) Marker Lamp, LH
(9) G901M

Auxiliary Rear Lamp Harness (Pickup Shown, Utility Similar)



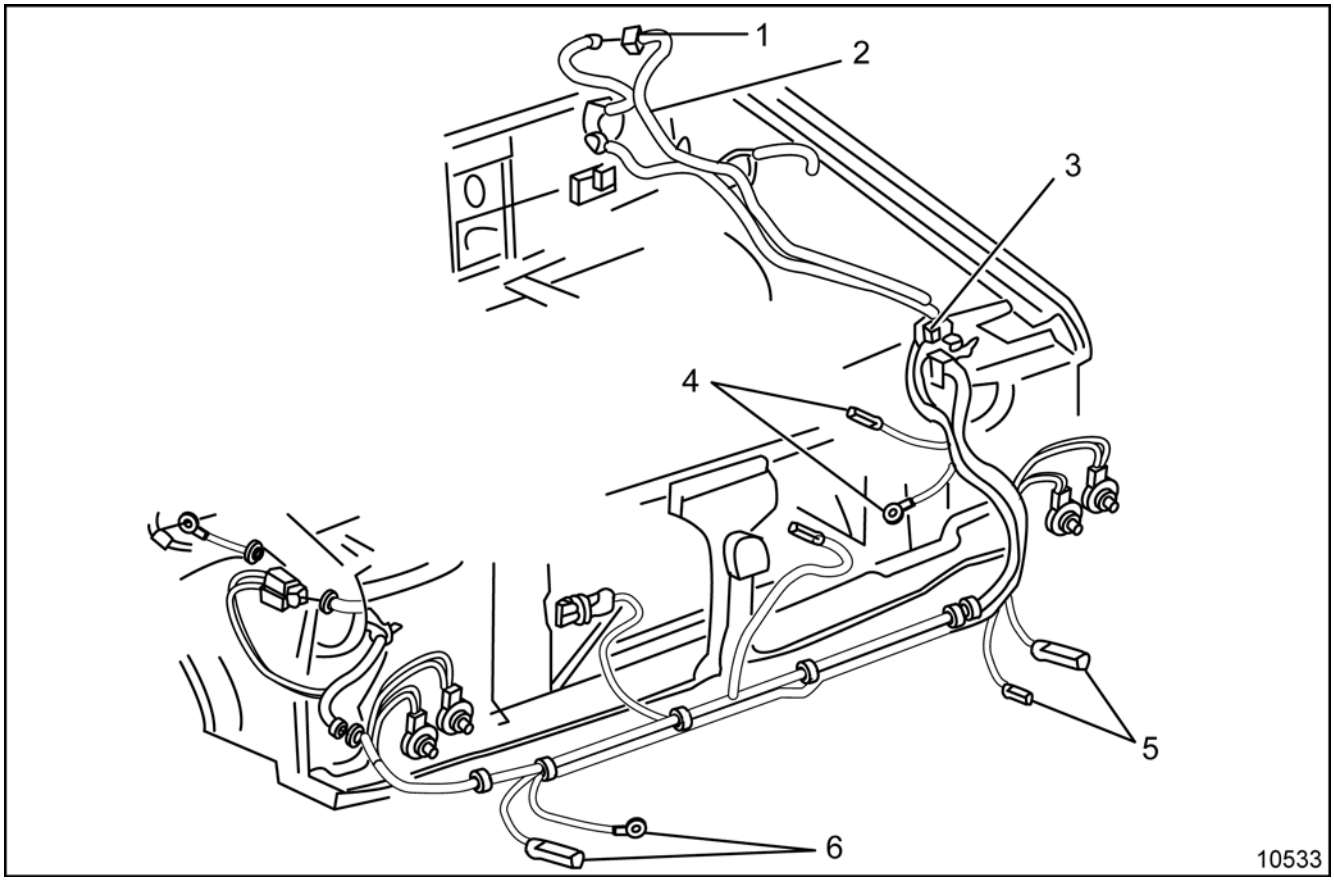
Legend

(1) C908M

(2) Auxiliary Rear Lamp Wiring Harness

(3) I/P Wiring Harness

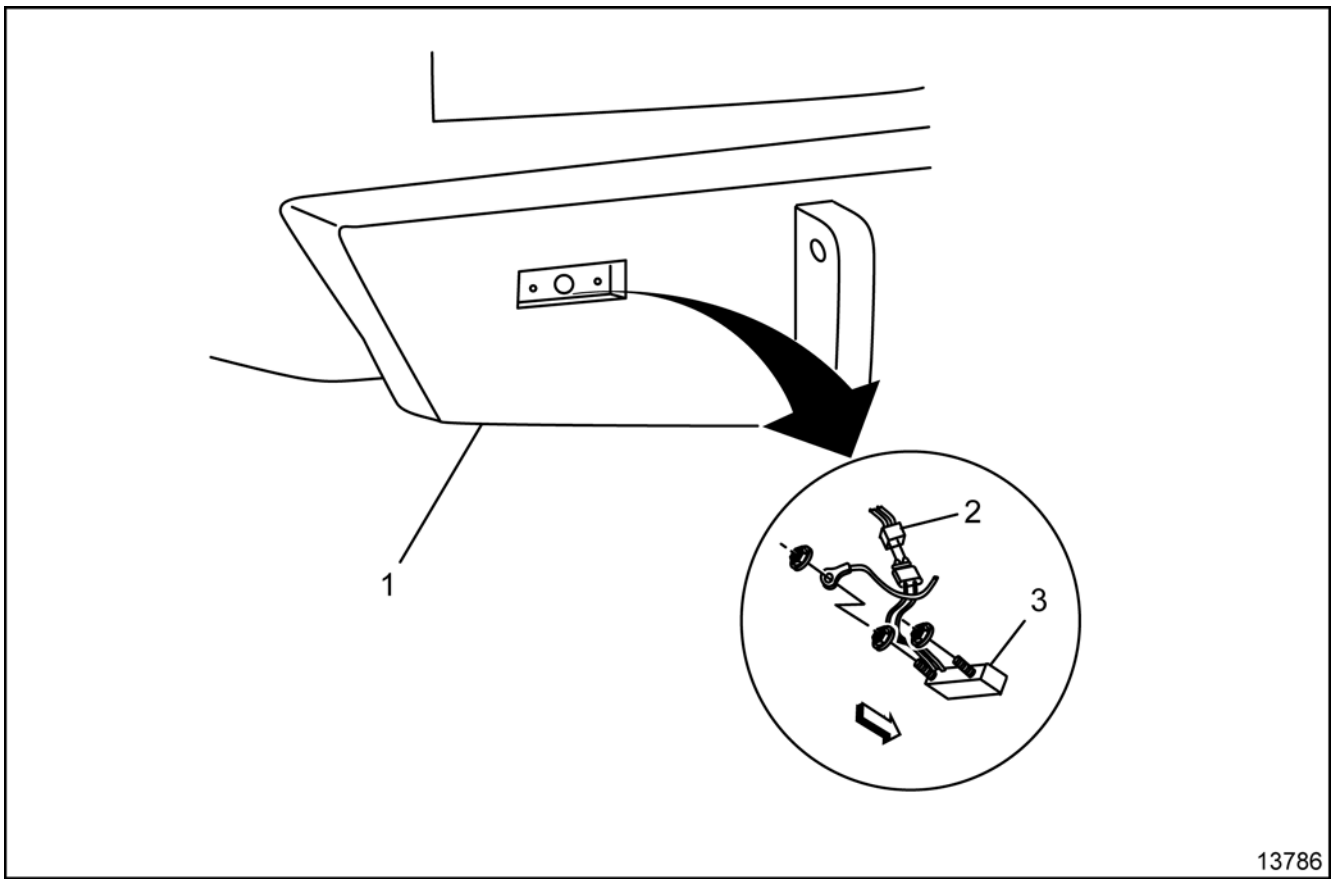
Forward Blackout (B/O) Lamp Harness



Legend

(1) I/P Wiring Harness
(2) Forward Lamp Wiring Harness
(3) Forward Lamp Harness Ground
(4) To Blackout (B/O) Headlamp
(5) To Blackout (B/O) Marker Lamp, LF
(6) To Blackout (B/O) Marker Lamp, RF

Rear Blackout (B/O) Lamps (Pickup)



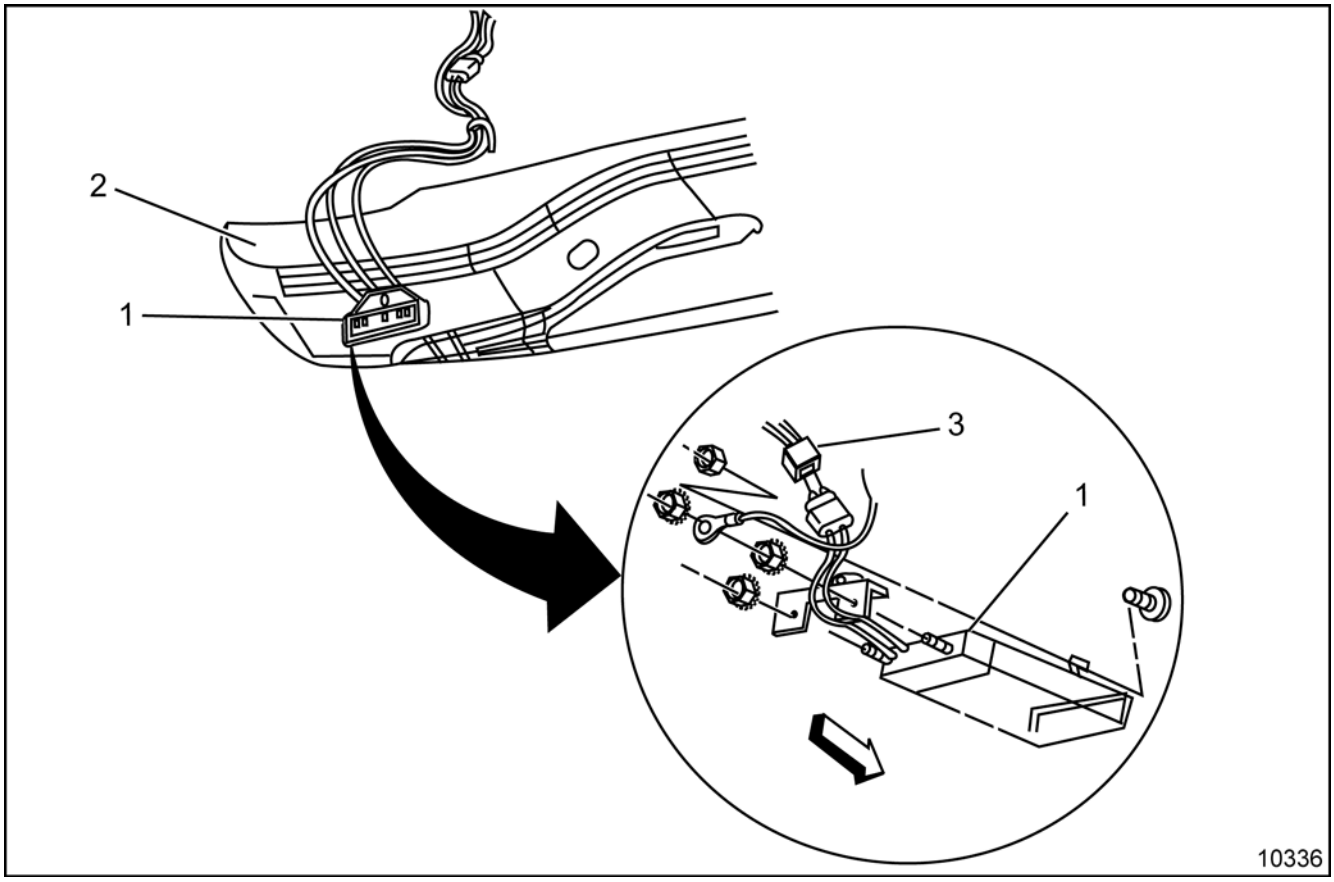
Legend

(1) Rear Bumper

(2) Lamp Harness Connector

(3) Blackout (B/O) Lamp Assembly

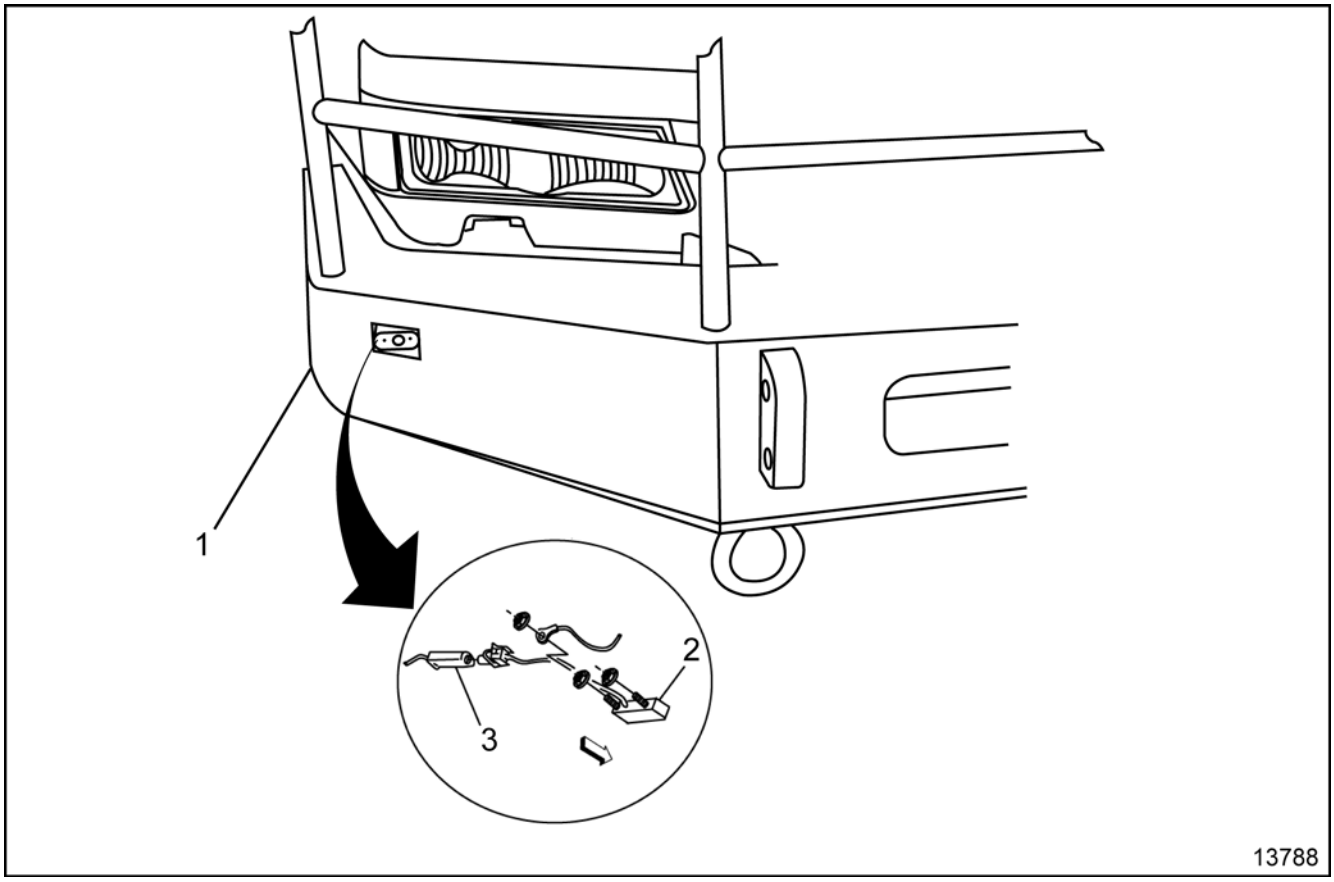
Rear Blackout (B/O) Lamps (Utility)



Legend

(1) Blackout (B/O) Lamp Assembly
(2) Rear Bumper
(3) Rear Lamp Harness Connector

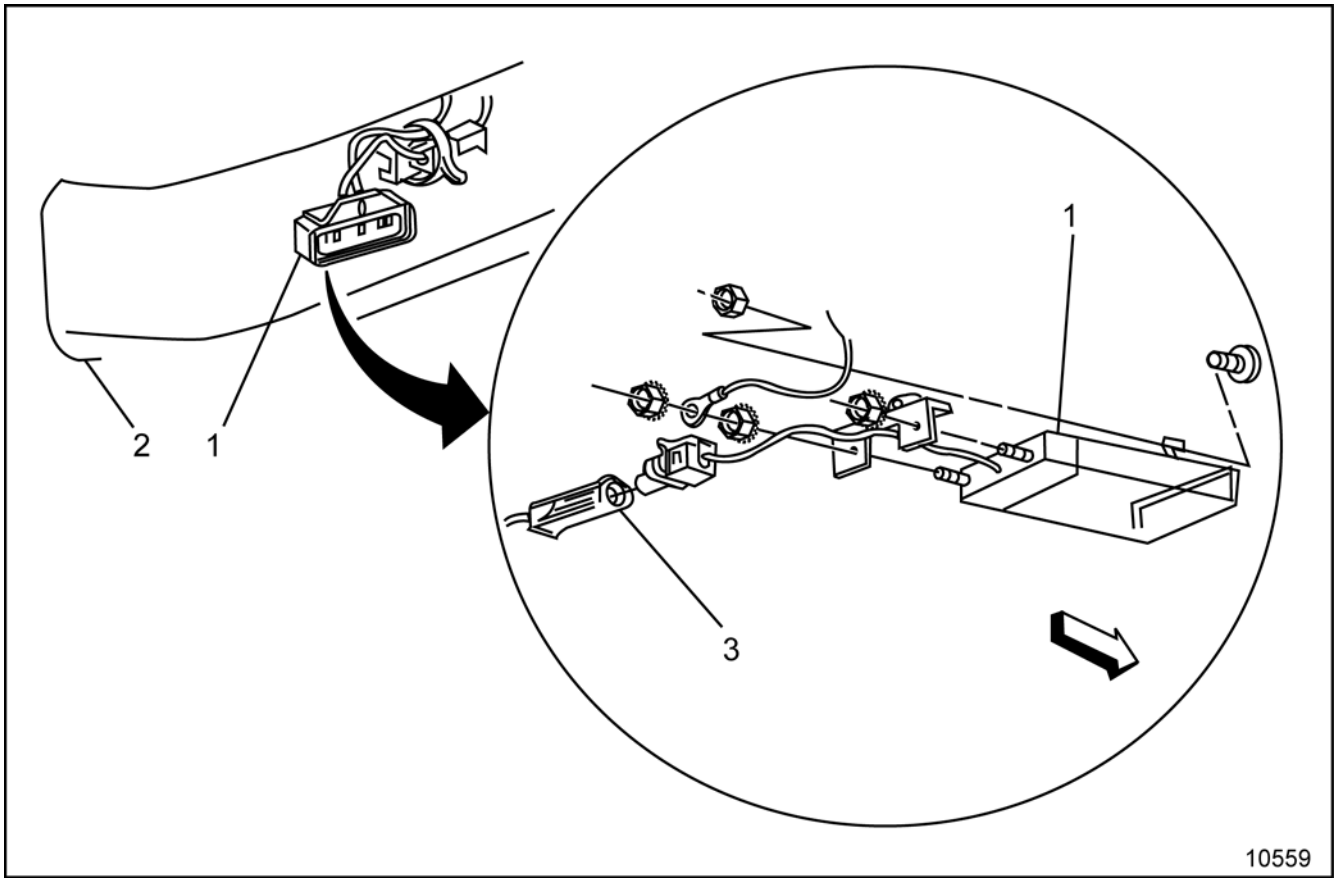
Front Blackout (B/O) Marker Lamps (Pickup)



Legend

(1) Front Bumper
(2) Blackout (B/O) Lamp Assembly
(3) Forward Lamp Harness

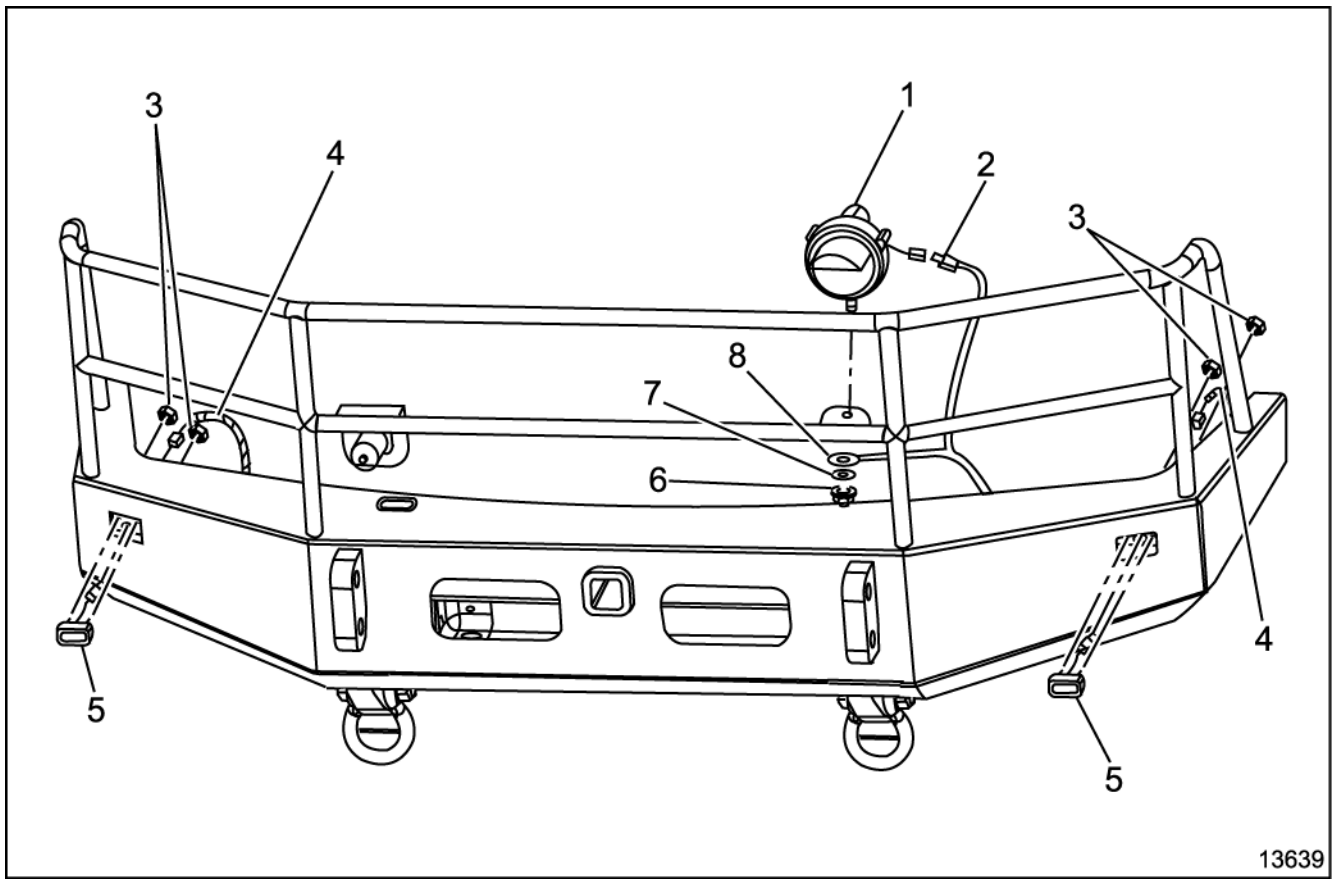
Front Blackout (B/O) Marker Lamps (Utility)



Legend

(1) Blackout (B/O) Lamp Assembly
(2) Front Grille
(3) Forward Lamp Harness

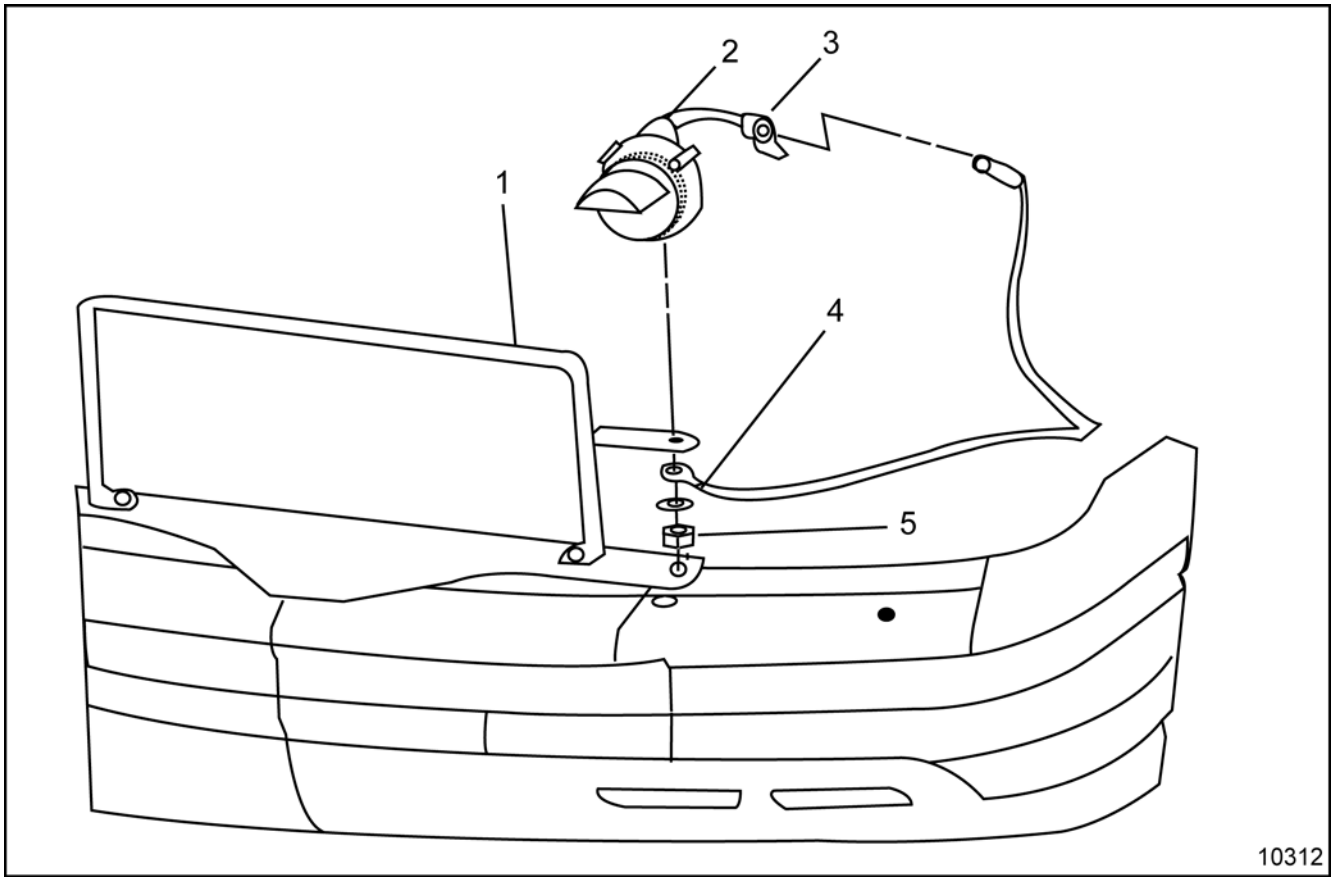
Front Lighting (Pickup)



Legend

(1) Blackout (B/O) Headlamp
(2) Headlamp Harness Connector
(3) Blackout (B/O) Marker Lamp Fastening Nuts
(4) Marker Lamp Harness Connector
(5) Marker Lamps
(6) Headlamp Fastening Nut
(7) Washer
(8) Headlamp Ground Lead

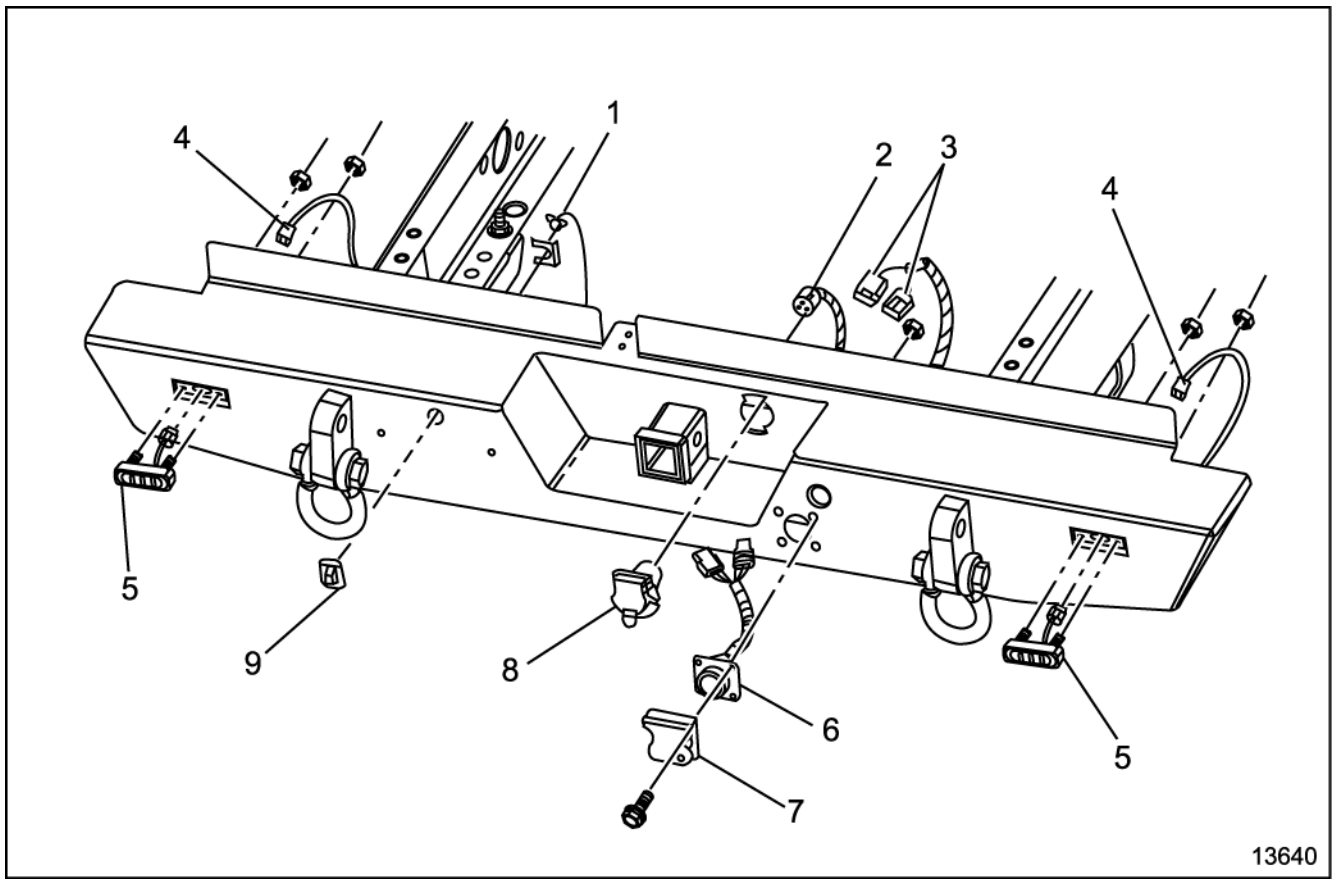
Blackout (B/O) Headlamp (Utility)



Legend

(1) Brace Assembly
(2) Blackout (B/O) Headlamp
(3) Wiring Harness Connector
(4) Ground Lead
(5) Headlamp Stud Nut

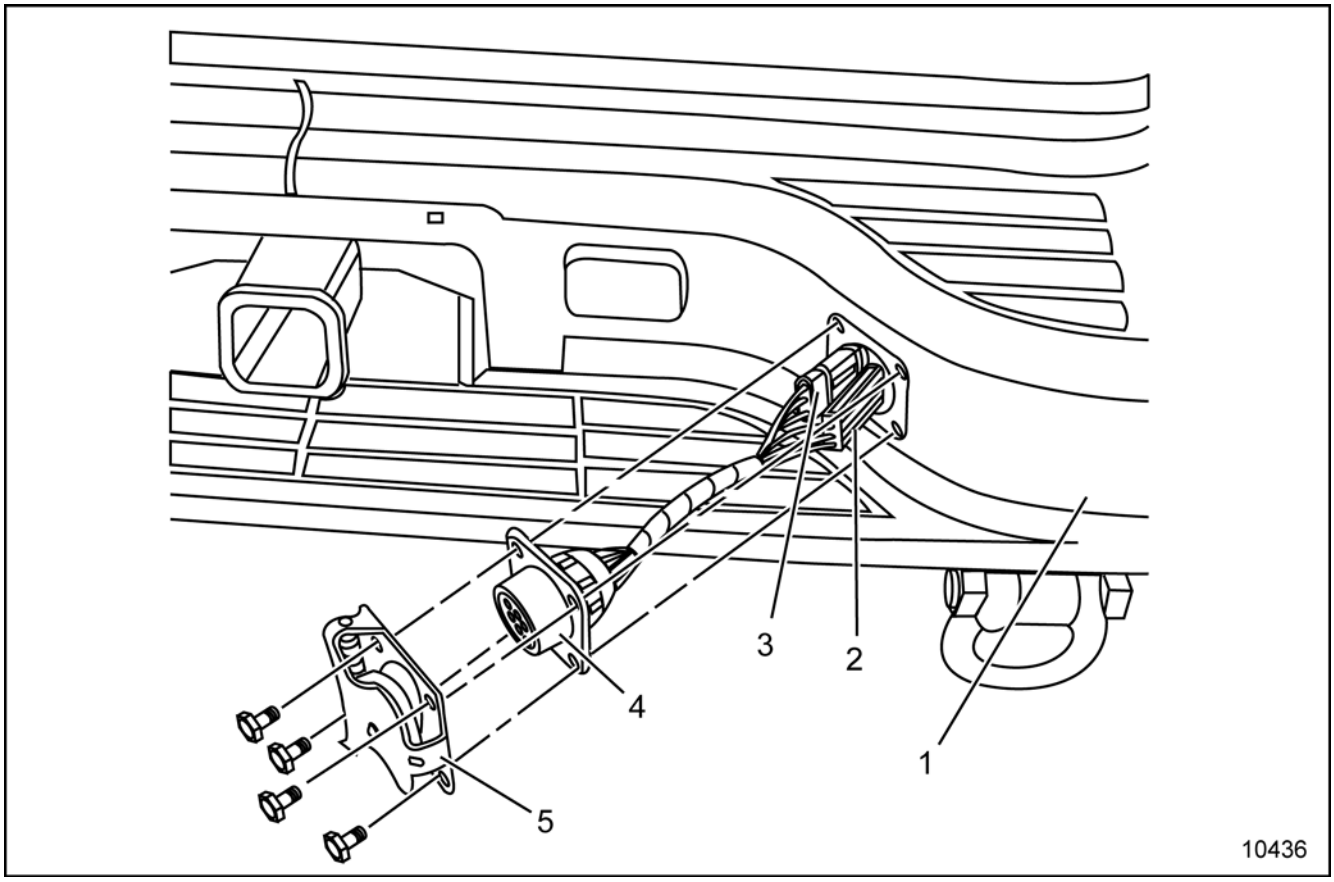
Rear Lighting (Pickup)



Legend

(1) License Plate Lamp
(2) Trailer Harness Connector (Commercial)
(3) Trailer Harness Connector (Military)
(4) Maker Lamp Harness Connections
(5) Blackout (B/O) Marker Lamps
(6) Trailer Connector (Military)
(7) Trailer Connector Cover
(8) Trailer Connector (Commercial)
(9) License Plate Lamp

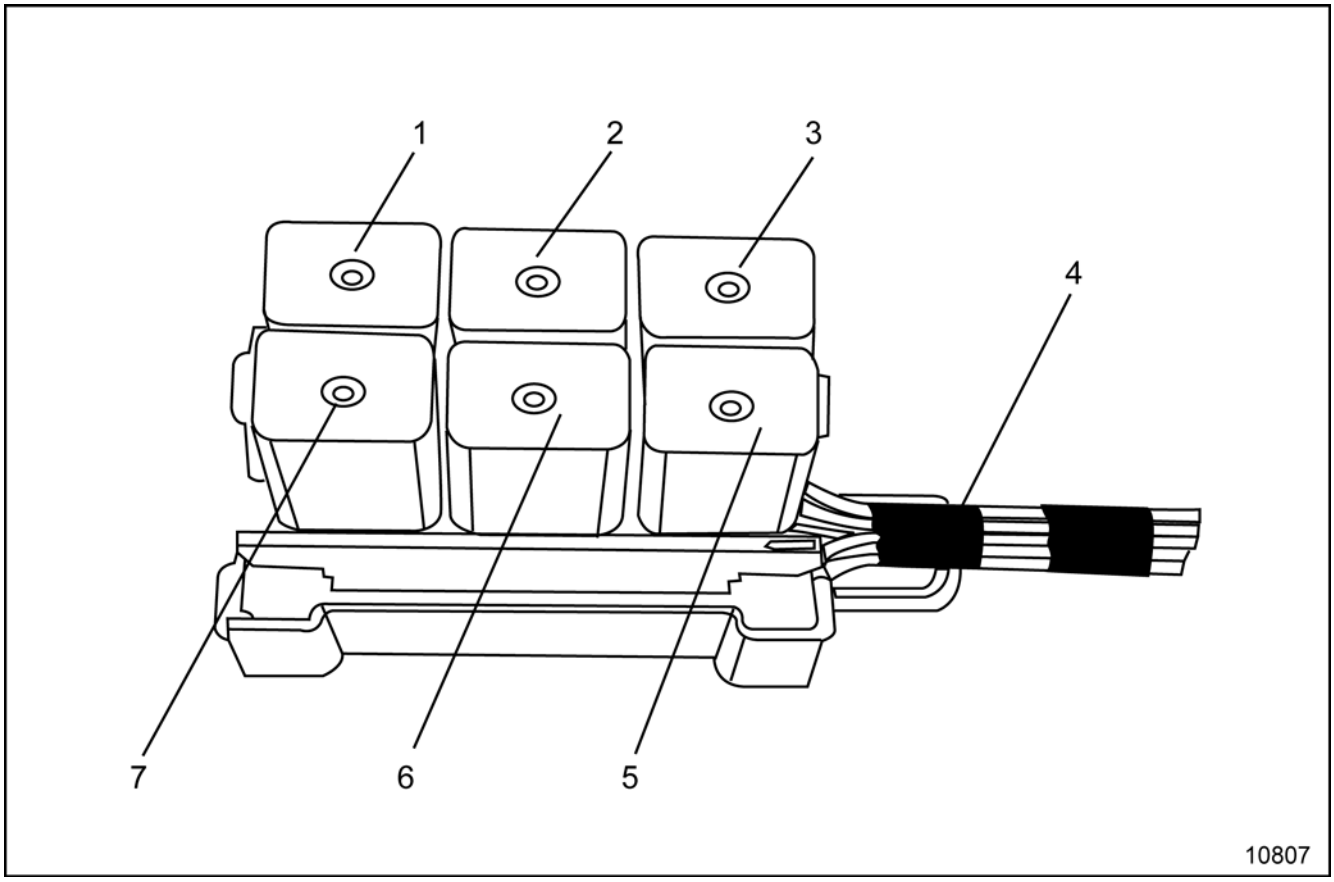
Trailer Wiring Harness (Utility)



Legend

(1) Bumper
(2) C900
(3) C901
(4) Trailer Connector
(5) Trailer Connector Cover

Relay Block

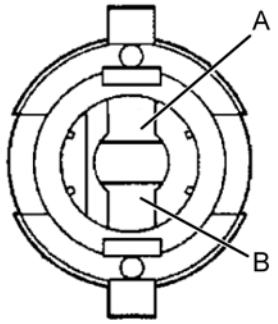


Legend

(1) Turn Signal Relay
(2) Park Lamp Relay
(3) Headlamp Hi-Beam Relay
(4) Interrupt Wiring Harness
(5) Headlamp Low-Beam Relay
(6) DRL Relay
(7) Horn Relay

Lighting Systems Connector End Views

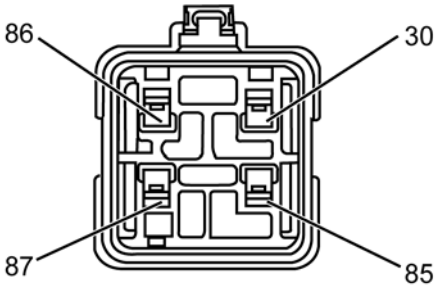
License Plate Lamp



7927

Connector Part Information	• 12110053 • Lamp Socket Type W-2 Axial (LT GRY)		
Pin	**Wire Color**	**Circuit No.**	**Function**
A	BLK	19	Ground
B	BRN	915	Lamp Supply Voltage

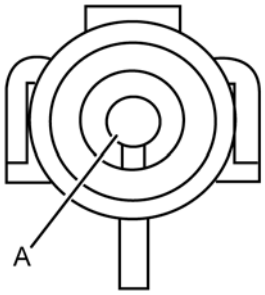
Blackout (B/O) Drive Relay



10550

Connector Part Information	• 12129716 • 4-Way F M/P Series 280 (GRY)		
Pin	**Wire Color**	**Circuit No.**	**Function**
86	WHT	915	Blackout (B/O) Drive Relay Control Voltage
85	TAN/WHT	901	Blackout (B/O) Headlamp Supply Voltage
87	PNK	911	Blackout (B/O) Controls Signal
30	BRN/WHT	901	Blackout (B/O) Headlamp Switch Signal

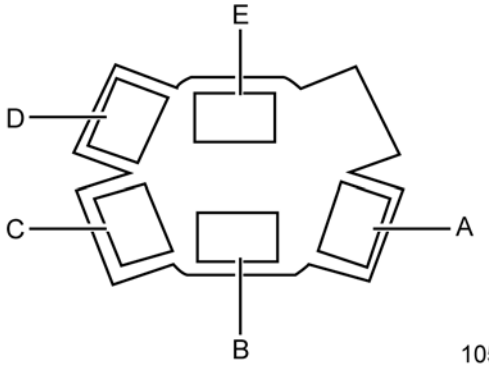
Blackout (B/O) Headlamp



10565

Connector Part Information	• 12010996 • 1-Way M Weather Pack (BLK)		
Pin	**Wire Color**	**Circuit No.**	**Function**
A	TAN/WHT	901	Blackout (B/O) Headlamp Supply Voltage

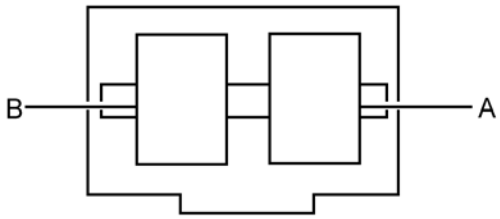
Blackout (B/O) Drive Lamp Switch



10566

Connector Part Information	• 08911352 • 5-Way F Series 56 (BLK)		
Pin	**Wire Color**	**Circuit No.**	**Function**
A	___	___	Not Used
B	TAN/ WHT	901	Blackout (B/O) Headlamp Supply Voltage
C	PNK	911	Blackout (B/O) Drive Lamp Switch Supply Voltage
D	WHT	915	Blackout (B/O) Control Relay Signal
E	BLK	150	Ground

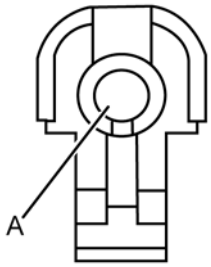
Blackout (B/O) Lamps Fuse



10567

Connector Part Information	• 12010105 • 2-Way M Weather Pack (BLK)		
Pin	**Wire Color**	**Circuit No.**	**Function**
A	BRN/WHT	900	Blackout (B/O) Marker Lamps Signal
B	PNK	911	Blackout (B/O) Controls Supply Voltage

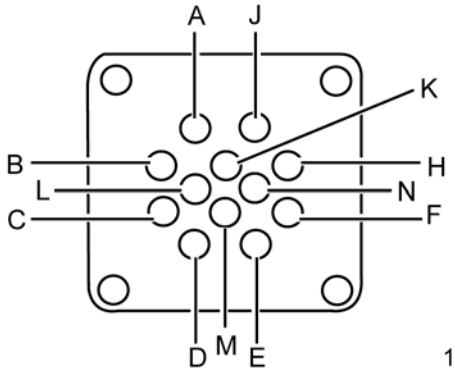
Blackout (B/O) Marker Lamp (Front)



10561

Connector Part Information	• 12015791 • 1-Way F Weather Pack (BLK)		
Pin	**Wire Color**	**Circuit No.**	**Function**
A	BRN/WHT	900	Blackout (B/O) Marker Lamps Supply Voltage

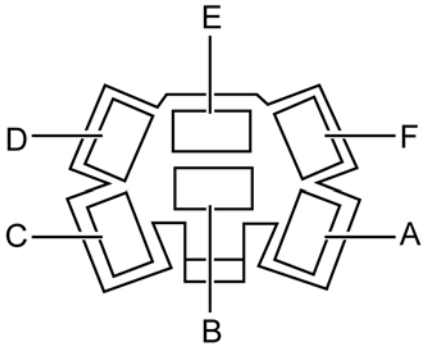
Trailer Lamp Connector



10562

Connector Part Information	• 08917884 • 12-Way Weather Pack (BLK)		
Pin	**Wire Color**	**Circuit No.**	**Function**
A	BRN	900	Blackout (B/O) Marker Lamps
B	YEL	18	Brake/Taillamp Supply Voltage
C	BRN	900	Blackout (B/O) Control Circuits
D	BLK	150	Service Stoplamps
E	BRN	9	Stoplamp Switch Output
F	DK GRN	902	Blackout (B/O) Brakelamps
H	BRN	900	Blackout (B/O) Brakelamp
J	DK GRN	19	Brake/Taillamp Supply Voltage
K-N	___	___	Not Used

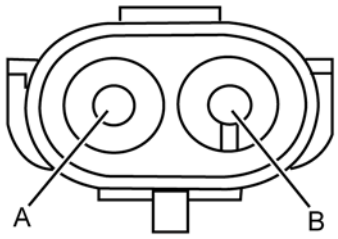
Blackout (B/O) Service Switch



Connector Part Information	• 08917695 • 6-Way F Series 58 (BLK)

Pin	Wire Color	Circuit No.	Function
A	PNK	911	Blackout (B/O) Drive Lamp Switch Signal
B	ORN	40	Relay Block I/P Voltage
C	ORN	912	Blackout (B/O) Control Signal Circuits
D	WHT	913	Fuse Block Left I/P Voltage
E	WHT	17	Stoplamp Switch Signal
F	DK GRN/ WHT	902	Blackout (B/O) Stoplamps Signal

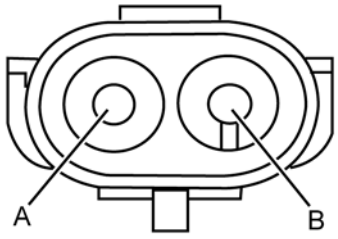
Blackout (B/O) Lamps (Right Rear)



Connector Part Information	• 12010973 • 2-Way M Weather Pack (BLK)

Pin	Wire Color	Circuit No.	Function
A	GRN/ WHT	902	Blackout (B/O) Stoplamp Supply Voltage
B	BRN/ WHT	900	Blackout (B/O) Marker Lamp Supply Voltage

Blackout (B/O) Lamps (Left Rear)



Connector Part Information	• 12010973 • 2-Way M Weather Pack (BLK)

Pin	Wire Color	Circuit No.	Function
A	GRN/ WHT	902	Blackout (B/O) Stoplamp Supply Voltage
B	BRN/ WHT	900	Blackout (B/O) Marker Lamp Supply Voltage

Diagnostic Information and Procedures

Symptom List

Refer to a symptom diagnostic procedure from the following list in order to diagnose the symptom:

- Blackout (B/O) Headlamp Inoperative
- Blackout (B/O) Headlamp Always On
- Headlamps Operate in Blackout (B/O) Mode
- Backup Lamps Inoperative
- Blackout (B/O) Stoplamps Inoperative
- Blackout (B/O) Marker Lamps Inoperative
- Blackout (B/O) Marker Lamps Always On
- DRL Operate in Blackout (B/O) Mode
- Backup Lamps Operate in Blackout (B/O) Mode
- Park Lamps Operate in Blackout (B/O) Mode
- CTSY Lamps Operate in Blackout (B/O) Mode
- Turn Signals Operate in Blackout (B/O) Mode
- Hi Beam Headlamps Operate in Blackout (B/O) Mode
- Low Beam Headlamps Operate in Blackout (B/O) Mode

Blackout (B/O) Headlamp Inoperative

Step	Action	Yes	No
Schematic Reference: Lighting Systems Schematics			
1	Did you review Blackout (B/O) Lighting Description and Operation?	Go to Step 2	Go to Description and Operation
2	Inspect condition of fuses. If fuse is open, locate and repair source of overload and replace fuse. Did you find and correct the condition?	Go to Step 20	Go to Step 3
3	1. Place blackout (B/O) service switch in blackout (B/O) mode. 2. Turn ON blackout (B/O) headlamp switch. 3. Connect a test lamp to circuit 901 (TAN/WHT) at connector C102M cavity A of the blackout (B/O) headlamp and ground. Does the test lamp illuminate?	Go to Step 4	Go to Step 7
4	1. Disconnect the blackout (B/O) lamp. 2. Connect a self-powered test lamp at circuit 151 (BLK) and ground. Does the test lamp illuminate?	Go to Step 6	Go to Step 5
5	Locate and repair open circuit 151 (BLK) between blackout (B/O) headlamp and G100M. Did you complete the repair?	Go to Step 20	—
6	Replace blackout (B/O) headlamp bulb. Did you complete the replacement?	Go to Step 20	—
7	1. Place blackout (B/O) switch to ON position. 2. Connect a test lamp at circuit 901 (TAN/WHT) wire between blackout (B/O) drive relay cavity 85 and ground. Does the test lamp illuminate?	Go to Step 8	Go to Step 9

Blackout (B/O) Headlamp Inoperative (cont'd)

Step	Action	Yes	No
8	Locate and repair open in circuit 901 (TAN/WHT) wire between blackout (B/O) lamp cavity A and blackout (B/O) drive relay cavity 85. Did you complete the repair?	Go to Step 20	—
9	Connect a test lamp at circuit 911 (PNK) wire between blackout (B/O) drive relay cavity 87 and ground. Does the test lamp illuminate?	Go to Step 10	Go to Step 11
10	Connect test lamp at circuit 915 (WHT) wire cavity 86 and cavity 87 of the blackout (B/O) drive relay. Does the test lamp illuminate?	Go to Step 13	Go to Step 15
11	Connect a test lamp from blackout (B/O) service switch cavity A circuit 911 (PNK) and ground. Does the test lamp illuminate?	Go to Step 12	Go to Step 14
12	Locate and repair open in circuit 911 (PNK) between blackout (B/O) service lamp switch and blackout (B/O) drive relay. Did you complete the repair?	Go to Step 20	—
13	Replace blackout (B/O) drive relay. Did you complete the replacement?	Go to Step 20	—
14	Connect a test lamp from the blackout (B/O) service switch at cavity B circuit 40 (ORN) and ground. Does the test lamp illuminate?	Go to Step 19	Go to Step 18
15	1. Disconnect blackout (B/O) headlamp switch. 2. Connect a self-powered test lamp between blackout (B/O) headlamp switch cavity E circuit 150 (BLK) and ground. Does the test lamp illuminate?	Go to Step 16	Go to Step 17
16	Replace blackout (B/O) headlamp switch. Refer to Blackout (B/O) Switch Replacement in Instrument Panel, Gages, and Console. Did you complete the replacement?	Go to Step 20	—
17	Locate and repair open in circuit 150 (BLK) wire between blackout (B/O) headlamp switch and ground. Did you complete the repair?	Go to Step 20	—
18	Locate and repair open in circuit 40 (ORN) wire between connector C241 and blackout (B/O) service lamp switch cavity B. Did you complete the repair?	Go to Step 20	—
19	Replace blackout (B/O) service switch. Refer to Blackout (B/O) Switch Replacement in Instrument Panel, Gages, and Console. Did you complete the replacement?	Go to Step 20	—
20	Operate the system in order to verify the repair. Did you correct the condition?	System OK	Go to Step 2

Blackout (B/O) Headlamp Always On

Step	Action	Yes	No
Schematic Reference: Lighting Systems Schematics			
1	Did you review Blackout (B/O) Lighting Description and Operation?	Go to Step 2	Go Description and Operation
2	Place blackout (B/O) drive lamp switch in OFF mode. Connect a test lamp between blackout (B/O) drive lamp switch cavity B circuit 901 (TAN/WHT) to ground. Does the test lamp illuminate?	Go to Step 3	Go to Step 4
3	Replace blackout (B/O) drive lamp switch. Refer to Blackout (B/O) Switch Replacement in Instrument Panel, Gages, and Console. Did you complete the replacement?	Go to Step 5	—
4	Repair short to power in circuit 901 (TAN/WHT) or inoperable blackout (B/O) control relay. Did you find and correct the condition?	Go to Step 5	—
5	Operate the system in order to verify the repair. Did you correct the condition?	System OK	Go to Step 2

Headlamps Operate in Blackout (B/O) Mode

Step	Action	Yes	No
Schematic Reference: Lighting Systems Schematics			
1	Did you review Blackout (B/O) Lighting Description and Operation?	Go to Step 2	Go to Description and Operation
2	1. Place blackout (B/O) service switch into the blackout (B/O) mode. 2. Connect a test lamp from cavity 85 at the blackout (B/O) lighting drive relay and ground. Does the test lamp illuminate?	Go to Step 4	Go to Step 3
3	Replace blackout (B/O) drive relay. Did you complete the replacement?	Go to Step 5	—
4	Replace blackout (B/O) service switch. Refer to Blackout (B/O) Switch Replacement in Instrument Panel, Gages, and Console. Did you complete the replacement?	Go to Step 5	—
5	Operate the system in order to verify the repair. Did you correct the condition?	System OK	Go to Step 2

Backup Lamps Inoperative

Step	Action	Yes	No
Schematic Reference: Lighting Systems Schematics			
1	Did you review Blackout (B/O) Lighting Description and Operation?	Go to Step 2	Go to Description and Operation
2	Is only one backup lamp inoperative?	Go to Step 3	Go to Step 4

Backup Lamps Inoperative (cont'd)

Step	Action	Yes	No
3	Test the backup lamp supply voltage circuit of the inoperative bulb for high resistance, an open, or a short to ground. Did you find and correct the condition?	Go to Step 17	Go to Step 5
4	1. Inspect the condition of the backup lamp fuses. 2. If the fuse is open, locate and repair the source of the overload and replace fuse. Did you find and correct the condition?	Go to Step 17	Go to Step 6
5	Test the ground circuit of the inoperative bulb for high resistance or an open. Did you find and correct the condition?	Go to Step 17	Go to Step 13
6	Connect a test lamp between connector C1 cavity C of the junction block rear lamps and ground. Does the test lamp illuminate?	Go to Step 7	Go to Step 9
7	Connect a test lamp between connector C1 cavity E and ground. Does the test lamp illuminate?	Go to Step 8	Go to Step 13
8	Locate and repair the open or high resistance in the ground circuit. Did you complete the repair?	Go to Step 17	—
9	Connect a test lamp between cavity 30 of the interrupt relay and ground. Does the test lamp illuminate?	Go to Step 10	Go to Step 11
10	Locate and repair the open in circuit 24. Did you complete the repair?	Go to Step 17	—
11	Connect a test lamp between cavity 87 of the interrupt relay and ground. Does the test lamp illuminate?	Go to Step 14	Go to Step 12
12	Connect a test lamp between cavity F of the backup lamp switch and ground. Does the test lamp illuminate?	Go to Step 15	Go to Step 16
13	Replace the bulbs. Did you complete the replacement?	Go to Step 17	—
14	Replace the interrupt relay. Did you complete the replacement?	Go to Step 17	—
15	Locate and repair the open or high resistance in circuit 1524 or 24. Did you complete the repair?	Go to Step 17	—
16	Replace the backup lamp switch. Did you complete the replacement?	Go to Step 17	—
17	Operate the system in order to verify the repair. Did you correct the condition?	System OK	Go to Step 2

Blackout (B/O) Stoplamps Inoperative

Step	Action	Yes	No
Schematic Reference: Lighting Systems Schematics			
1	Did you review Blackout (B/O) Lighting Description and Operation?	Go to Step 2	Go to Description and Operation
2	Observe the stoplamps while pressing the brake pedal. Does the system operate normally?	Go to Testing for Electrical Intermittents in Wiring Systems of the 2004 C/K Truck Service Manual	Go to Step 3
3	Inspect the fuse(s), check for damaged or corroded inline connectors, check for broken or partially broken wires inside insulation, and properly installed aftermarket equipment. Did you find the condition?	Go to Step 4	Go to Step 5
4	Make necessary repairs. Did you complete the repairs?	Go to Step 15	—
5	Are all the stoplamps inoperative?	Go to Step 6	Go to Step 8
6	1. Disconnect blackout (B/O) service lamp switch. 2. Connect test lamp between circuit 913 (WHT) cavity D wire and ground. Does the test lamp illuminate?	Go to Step 10	Go to Step 7
7	Locate and repair the open or high resistance in circuit 913. Did you correct the condition?	Go to Step 15	—
8	Test the supply voltage circuit of the inoperative lamp for high resistance, an open, or a short to ground. Refer to Circuit Testing, and Wiring Repairs in Wiring Systems in the 2004 C/K Truck Service Manual. Did you find and correct the condition?	Go to Step 15	Go to Step 9
9	Test the ground circuit of the inoperative lamp for high resistance, or an open. Refer to Circuit Testing, and Wiring Repairs in Wiring Systems in the 2004 C/K Truck Service Manual. Did you find and correct the condition?	Go to Step 15	Go to Step 14
10	Using a fused jumper, connect cavity D to cavity F of the blackout (B/O) service lamp switch connector. Do the brake lamps illuminate?	Go to Step 11	Go to Step 12
11	Replace blackout (B/O) service lamp switch. Did you complete the replacement?	Go to Step 15	—
12	Connect a test lamp between terminal A of the rear blackout (B/O) stoplamps and ground. Did the test lamp illuminate?	Go to Step 14	Go to Step 13
13	Locate and repair the open or high resistance in circuit 902. Did you correct the condition?	Go to Step 15	—

Blackout (B/O) Stoplamps Inoperative (cont'd)

Step	Action	Yes	No
14	Replace the blackout (B/O) stoplamp(s). Did you complete the replacement?	Go to Step 15	—
15	Operate the system in order to verify the repair. Did you correct the condition?	System OK	Go to Step 2

Blackout (B/O) Marker Lamps Inoperative

Step	Action	Yes	No
Schematic Reference: Lighting Systems Schematics			
1	Did you review Blackout (B/O) Lighting Description and Operation?	Go to Step 2	Go to Description and Operation
2	Verify that the marker lamps are inoperative. Do the marker lamps operate normally?	Go to Testing for Electrical Intermittents in Wiring Systems of the 2004 C/K Truck Service Manual	Go to Step 3
3	Are all marker lamps inoperative?	Go to Step 4	Go to Step 8
4	Inspect the fuse(s), check for corroded inline connectors, check for broken or partially broken wires inside insulation, and for properly installed aftermarket equipment. Did you find the condition?	Go to Step 5	Go to Step 6
5	Make necessary repairs. Did you complete the repairs?	Go to Step 14	—
6	1. Place blackout (B/O) service switch in blackout (B/O) mode. 2. Connect a test lamp at cavity A circuit 911 (PNK) wire at blackout (B/O) service drive switch and ground. Does the test lamp illuminate?	Go to Step 7	Go to Step 14
7	Connect a test lamp between inline fuse cavity B circuit 911 (PNK) wire and ground. Does the test lamp illuminate?	Go to Step 11	Go to Step 10
8	Test the supply circuit of the inoperative lamp for high resistance, or an open. Refer to Circuit Testing, and Wiring Repairs in Wiring Systems in the 2004 C/K Truck Service Manual. Did you find and correct the condition?	Go to Step 18	Go to Step 9
9	Test the ground circuit of the inoperative lamp for high resistance, or an open. Refer to Circuit Testing, and Wiring Repairs in Wiring Systems in the 2004 C/K Truck Service Manual. Did you find and correct the condition?	Go to Step 18	Go to Step 12

Blackout (B/O) Marker Lamps Inoperative (cont'd)

Step	Action	Yes	No
10	Locate and repair an open in circuit 911 (PNK) wire between inline fuse B and blackout (B/O) service drive switch. Did you complete the repair?	Go to Step 18	—
11	Disconnect the blackout (B/O) marker lamp(s) and connect a test lamp between cavity A circuit 900 (BRN/WHT) front and circuit 900 (BRN/WHT) rear to ground. Does the test lamp illuminate?	Go to Step 12	Go to Step 13
12	Replace blackout (B/O) marker lamp(s) assembly. Did you complete the replacement?	Go to Step 18	—
13	Locate and repair an open in circuit 900 (BRN/WHT) front and circuit 900 (BRN/WHT) rear wire between inline fuse and blackout (B/O) marker lamp assembly. Did you complete the repair?	Go to Step 18	—
14	Connect a test lamp between the blackout (B/O) service switch to circuit 40 (ORN) cavity B and ground. Does the test lamp illuminate?	Go to Step 15	Go to Step 16
15	Replace the blackout (B/O) service switch. Did you complete the replacement?	Go to Step 18	—
16	Connect a test lamp at I/P relay block connector C8 cavity C circuit 40 (ORN) wire and ground. Does the test lamp illuminate?	Go to Step 17	Refer to the 2004 C/K Truck Service Manual
17	Locate and repair open in circuit 40 (ORN) wire between I/P relay block connector C8 cavity C and the blackout (B/O) service drive switch. Did you complete the repair?	Go to Step 18	—
18	Operate the system in order to verify the repair. Did you correct the condition?	System OK	Go to Step 2

Blackout (B/O) Marker Lamps Always On

Step	Action	Yes	No
Schematic Reference: Lighting Systems Schematics			
1	Did you review Blackout (B/O) Lighting Description and Operation?	Go to Step 2	Go to Description and Operation
2	Verify that the marker lamps are always on. Do the marker lamps operate normally?	Go to Testing for Electrical Intermittents in Wiring Systems of the 2004 C/K Truck Service Manual	Go to Step 3

Blackout (B/O) Marker Lamps Always On (cont'd)

Step	Action	Yes	No
3	1. Disconnect the blackout (B/O) service switch. 2. Connect a test lamp between circuit 911 (PNK) cavity A wire and ground. Does the test lamp illuminate?	Go to Step 4	Go to Step 5
4	Repair a short to power in circuit 911 (PNK) or circuit 900 (BRN/WHT) wire(s) between the blackout (B/O) service switch and blackout (B/O) marker lamps. Did you complete the repair?	Go to Step 6	—
5	Replace the blackout (B/O) service switch. Did you complete the replacement?	Go to Step 6	—
6	Operate the system in order to verify the repair. Did you correct the condition?	System OK	Go to Step 2

DRL Operate in Blackout (B/O) Mode

Step	Action	Yes	No
Schematic Reference: Lighting Systems Schematics			
1	Did you review Blackout (B/O) Lighting Description and Operation?	Go to Step 2	Go to Description and Operation
2	1. Place the blackout (B/O) service switch in blackout (B/O) mode. 2. Connect a test lamp at cavity C of the blackout (B/O) switch and ground. Does the test lamp illuminate?	Go to Step 3	Go to Step 6
3	1. Disconnect the blackout (B/O) service switch connector from the switch. 2. Connect a test lamp at cavity C of the connector and ground. Does the test lamp illuminate?	Go to Step 5	Go to Step 4
4	Replace the blackout (B/O) service switch. Did you complete the replacement?	Go to Step 9	—
5	Locate and repair the short to voltage on circuit 912 (ORN). Did you complete the repair?	Go to Step 9	—
6	Remove the DRL interrupt relay from the relay module. Are the DRLs illuminated?	Go to Step 8	Go to Step 7
7	Replace the DRL relay. Did you complete the replacement?	Go to Step 9	—
8	Locate and repair the short to voltage on circuit 592 (LT GRN/BLK). Did you complete the repair?	Go to Step 9	—
9	Operate the system in order to verify the repair. Did you correct the condition?	System OK	Go to Step 2

Backup Lamps Operate in Blackout (B/O) Mode

Step	Action	Yes	No
Schematic Reference: Lighting Systems Schematics			
1	Did you review Blackout (B/O) Lighting Description and Operation?	Go to Step 2	Go to Description and Operation
2	1. Place the blackout (B/O) service switch in blackout (B/O) mode. 2. Connect a test lamp at cavity C of the blackout (B/O) switch and ground. Does the test lamp illuminate?	Go to Step 3	Go to Step 6
3	1. Disconnect the blackout (B/O) service switch connector form the switch. 2. Connect a test lamp at cavity C of the connector and ground. Does the test lamp illuminate?	Go to Step 5	Go to Step 4
4	Replace the blackout (B/O) service switch. Did you complete the replacement?	Go to Step 9	—
5	Locate and repair the short to voltage on circuit 912 (ORN). Did you complete the repair?	Go to Step 9	—
6	Remove the backup lamp interrupt relay from the relay module. Are the backup lamps illuminated?	Go to Step 8	Go to Step 7
7	Replace the backup interrupt relay. Did you complete the replacement?	Go to Step 9	—
8	Locate and repair the short to voltage on circuit 24 (GRN/BLK). Did you complete the repair?	Go to Step 9	—
9	Operate the system in order to verify the repair. Did you correct the condition?	System OK	Go to Step 2

Park Lamps Operate in Blackout (B/O) Mode

Step	Action	Yes	No
Schematic Reference: Lighting Systems Schematics			
1	Did you review Blackout (B/O) Lighting Description and Operation?	Go to Step 2	Go to Description and Operation
2	1. Place the blackout (B/O) service switch in blackout (B/O) mode. 2. Connect a test lamp at cavity C of the blackout (B/O) switch and ground. Does the test lamp illuminate?	Go to Step 3	Go to Step 6

Park Lamps Operate in Blackout (B/O) Mode (cont'd)

Step	Action	Yes	No
3	1. Disconnect the blackout (B/O) service switch connector from the switch. 2. Connect a test lamp at cavity C of the connector and ground. Does the test lamp illuminate?	Go to Step 5	Go to Step 4
4	Replace the blackout (B/O) service switch. Did you complete the replacement?	Go to Step 9	—
5	Locate and repair the short to voltage on circuit 912 (ORN). Did you complete the repair?	Go to Step 9	—
6	Remove the park lamp interrupt relay from the relay module. Are the park lamps illuminated?	Go to Step 8	Go to Step 7
7	Replace the park lamp interrupt relay. Did you complete the replacement?	Go to Step 9	—
8	Locate and repair the short to voltage on circuit 1080 (WHT). Did you complete the repair?	Go to Step 9	—
9	Operate the system in order to verify the repair. Did you correct the condition?	System OK	Go to Step 2

CTSY Lamps Operate in Blackout (B/O) Mode

Step	Action	Yes	No
Schematic Reference: Lighting Systems Schematics			
1	Did you review Blackout (B/O) Lighting Description and Operation?	Go to Step 2	Go to Description and Operation
2	1. Place the blackout (B/O) service lamp switch in the blackout (B/O) mode. 2. Connect a test lamp at cavity C of the blackout (B/O) switch and ground. Does the test lamp illuminate?	Go to Step 3	Go to Step 6
3	1. Disconnect the blackout (B/O) service switch connector from the switch. 2. Connect a test lamp at cavity C of the connector and ground. Does the test lamp illuminate?	Go to Step 5	Go to Step 4
4	Replace the blackout (B/O) service switch. Did you complete the replacement?	Go to Step 9	—
5	Locate and repair the short to voltage on circuit 912 (ORN). Did you complete the repair?	Go to Step 9	—

CTSY Lamps Operate in Blackout (B/O) Mode (cont'd)

Step	Action	Yes	No
6	Remove the CTSY 1 interrupt relay from the relay module. Are the CTSY lamps illuminated?	Go to Step 8	Go to Step 7
7	Replace the CTSY 1 interrupt relay. Did you complete the replacement?	Go to Step 9	—
8	Locate and repair the short to voltage on circuit 690 (GRY/BLK). Did you complete the repair?	Go to Step 9	—
9	Operate the system in order to verify the repair. Did you correct the condition?	System OK	Go to Step 2

Turn Signals Operate in Blackout (B/O) Mode

Step	Action	Yes	No
Schematic Reference: Lighting Systems Schematics			
1	Did you review Blackout (B/O) Lighting Description and Operation?	Go to Step 2	Go to Description and Operation
2	1. Place the blackout (B/O) service switch in blackout (B/O) mode. 2. Connect a test lamp at cavity C of the blackout (B/O) switch and ground. Does the test lamp illuminate?	Go to Step 3	Go to Step 6
3	1. Disconnect the blackout (B/O) service switch connector from the switch. 2. Connect a test lamp at cavity C of the connector and ground. Does the test lamp illuminate?	Go to Step 5	Go to Step 4
4	Replace the blackout (B/O) service switch. Did you complete the replacement?	Go to Step 9	—
5	Locate and repair the short to voltage on circuit 912 (ORN). Did you complete the repair?	Go to Step 9	—
6	Remove the turn signal interrupt relay. Do the turn signals operate?	Go to Step 8	Go to Step 7
7	Replace the turn signal interrupt relay. Did you complete the replacement?	Go to Step 9	—
8	Locate and repair the short to voltage on circuit 639 (PNK). Did you complete the repair?	Go to Step 9	—
9	Operate the system in order to verify the repair. Did you correct the condition?	System OK	Go to Step 2

Hi Beam Headlamps Operate in Blackout (B/O) Mode

Step	Action	Yes	No
Schematic Reference: Lighting Systems Schematics			
1	Did you review Blackout (B/O) Lighting Description and Operation?	Go to Step 2	Go to Description and Operation
2	1. Place the blackout (B/O) service switch in blackout (B/O) mode. 2. Connect a test lamp at cavity C of the blackout (B/O) switch and ground. Does the test lamp illuminate?	Go to Step 3	Go to Step 6
3	1. Disconnect the blackout (B/O) service switch connector from the switch. 2. Connect a test lamp at cavity C of the connector and ground. Does the test lamp illuminate?	Go to Step 5	Go to Step 4
4	Replace the blackout (B/O) service switch. Did you complete the replacement?	Go to Step 9	—
5	Locate and repair the short to voltage on circuit 912 (ORN). Did you complete the repair?	Go to Step 9	—
6	Remove the backup lamp interrupt relay from the relay module. Are the backup lamps illuminated?	Go to Step 8	Go to Step 7
7	Replace the backup interrupt relay. Did you complete the replacement?	Go to Step 9	—
8	Locate and repair the short to voltage on circuit 1969 (BLK/WHT). Did you complete the repair?	Go to Step 9	—
9	Operate the system in order to verify the repair. Did you correct the condition?	System OK	Go to Step 2

Low Beam Headlamps Operate in Blackout (B/O) Mode

Step	Action	Yes	No
Schematic Reference: Lighting Systems Schematics			
1	Did you review Blackout (B/O) Lighting Description and Operation?	Go to Step 2	Go to Description and Operation
2	1. Place the blackout (B/O) service switch in blackout (B/O) mode. 2. Connect a test lamp at cavity C of the blackout (B/O) switch and ground. Does the test lamp illuminate?	Go to Step 3	Go to Step 6

Low Beam Headlamps Operate in Blackout (B/O) Mode (cont'd)

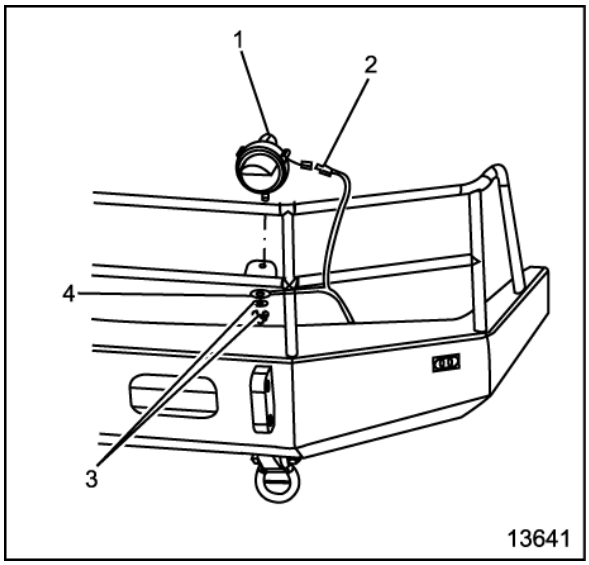
Step	Action	Yes	No
3	1. Disconnect the blackout (B/O) service switch connector from the switch. 2. Connect a test lamp at cavity C of the connector and ground. Does the test lamp illuminate?	Go to Step 5	Go to Step 4
4	Replace the blackout (B/O) service switch. Did you complete the replacement?	Go to Step 9	—
5	Locate and repair the short to voltage on circuit 912 (ORN). Did you complete the repair?	Go to Step 9	—
6	Remove the backup lamp interrupt relay from the relay module. Are the backup lamps illuminated?	Go to Step 8	Go to Step 7
7	Replace the backup interrupt relay. Did you complete the replacement?	Go to Step 9	—
8	Locate and repair the short to voltage on circuit 1970 (PNK/WHT). Did you complete the repair?	Go to Step 9	—
9	Operate the system in order to verify the repair. Did you correct the condition?	System OK	Go to Step 2

Repair Instructions

Headlamp Replacement – Blackout (B/O) (Pickup)

Removal Procedure

1. Remove the nut and washer (3) from the lamp stud at the base of the mounting bracket.
2. Remove the ground lead (4) by sliding it off the stud.
3. Disconnect the auxiliary wiring harness connector (2) from the headlamp.
4. Remove the blackout (B/O) lamp assembly (1) from the mounting bracket.

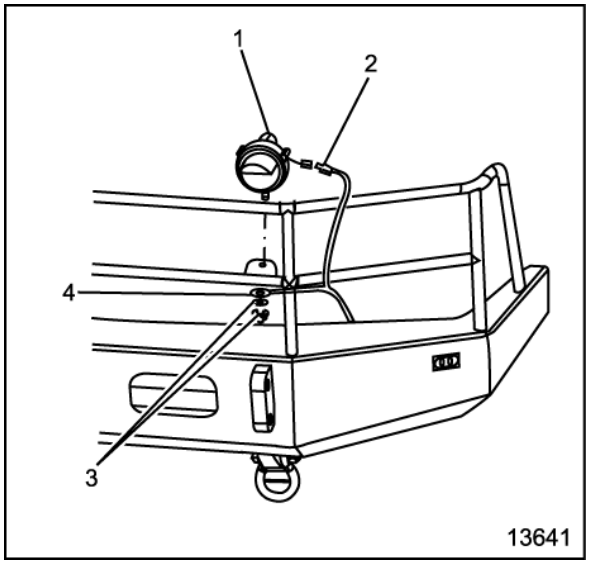


Installation Procedure

1. Install the blackout (B/O) lamp assembly (1) to the mounting bracket.
2. Connect the auxiliary wiring harness connector (2).
3. Install the ground lead (4) by sliding on the stud.

Notice: Refer to Fastener Notice in Cautions and Notices.

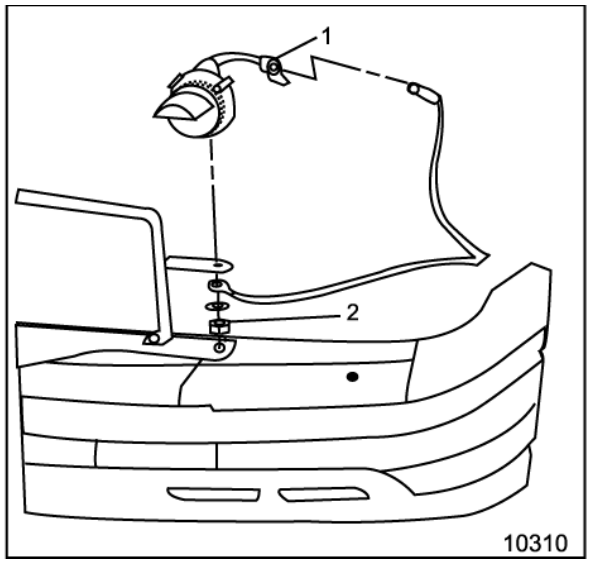
4. Install the washer and nut (3) to the lamp stud.
   Tighten
   Tighten the nut to 10 N•m (89 lb in).

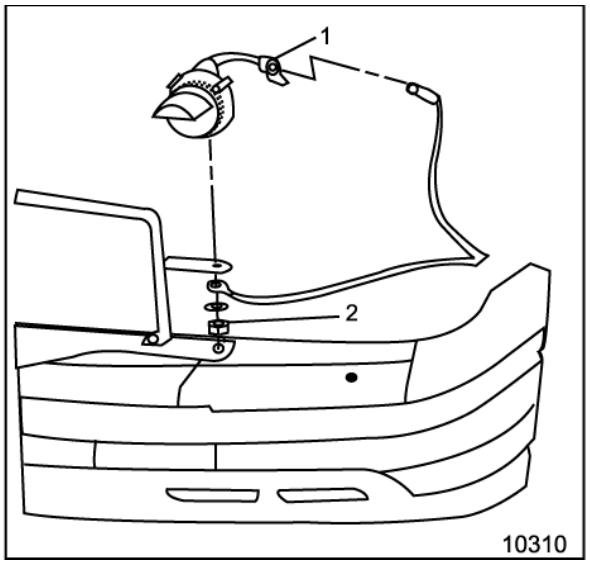


Headlamp Replacement – Blackout (B/O) (Utility)

Removal Procedure

1. Remove the radiator grille brush guard. Refer to Radiator Grille Brush Guard Replacement (Utility) in Bumpers.
2. Remove upper grille baffle.
3. Remove radiator grille.
4. Remove the nut (2) and washer from the lamp stud at the base of the mounting bracket.
5. Remove the ground lead by sliding it off the stud.
6. Disconnect the auxiliary wiring harness lead from headlamp.
7. Remove the blackout (B/O) lamp assembly from the mounting bracket.



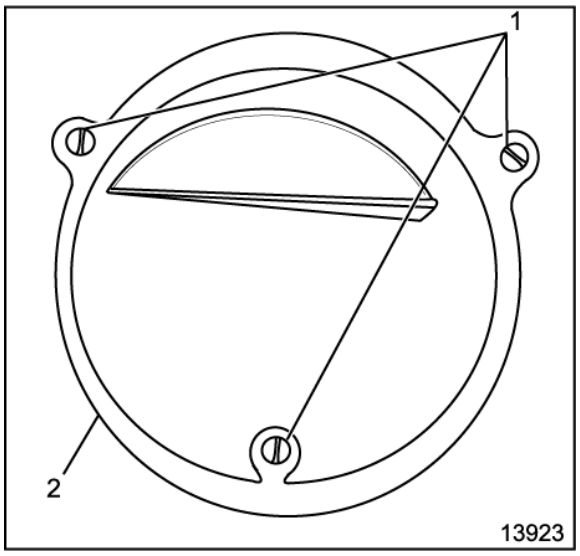


Installation Procedure

1. Install the blackout (B/O) lamp assembly to the mounting bracket.
2. Connect the auxiliary wiring harness connector (1).
3. Install the ground lead by sliding on the stud.

Notice: Refer to Fastener Notice in Cautions and Notices.

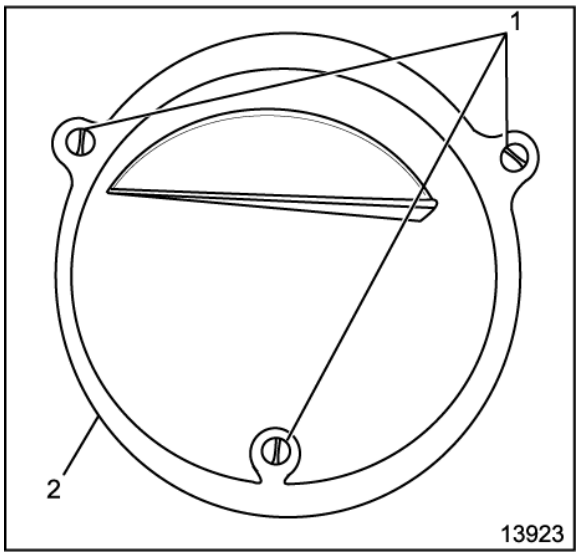
4. Install the washer and nut (2) to the lamp stud.
   Tighten
   Tighten the nut to 10 N•m (89 lb in).
5. Install the radiator grille.
6. Install upper grille baffle.
7. Install the radiator brush guard. Refer to Radiator Grille Brush Guard Replacement (Utility) in Bumpers.



Headlamp Bulb Replacement – Blackout (B/O)

Removal Procedure

1. Remove the screws (1) holding the lens cap to the assembly.
2. Remove the lens cap (2) and O-ring.
3. Remove the bulb from the lamp socket.



Installation Procedure

Important: Use a standard 1073 bulb for replacement.

1. Install the new bulb in the lamp socket.

Notice: The O-ring installation must be a proper fit.

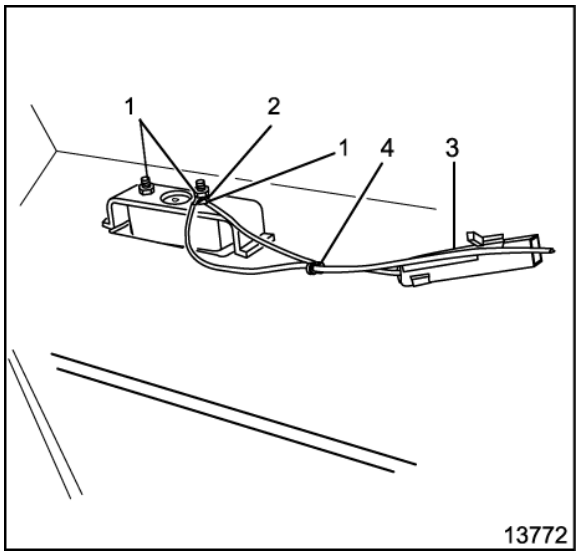
2. Install the O-ring with the lens cover (2).
3. Install the 3 screws (1) to the assembly.

Marker Lamp Replacement – Front Blackout (B/O) (Pickup)

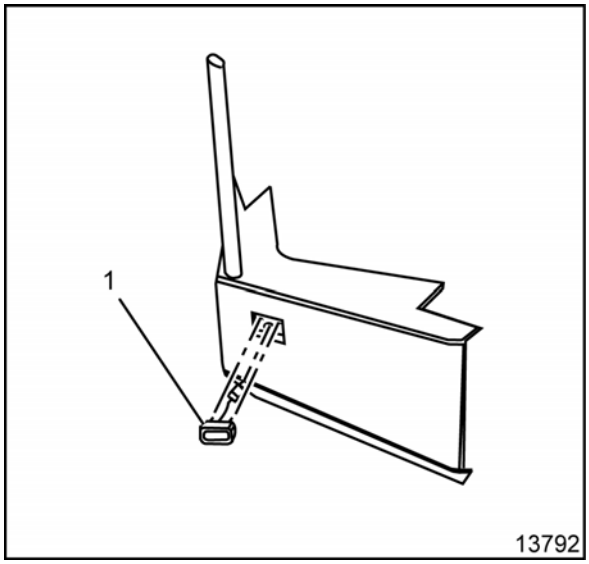
Removal Procedure

Caution: Refer to Battery Disconnect Caution in Cautions and Notices.

1. Disconnect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure in Engine Electrical.
2. Remove the wiring harness strap (4) from the marker lamp harness.
3. Remove the harness connector (3) by releasing the connector tab.
4. Remove the nuts (1) and the ground connector (2) from the marker lamp.

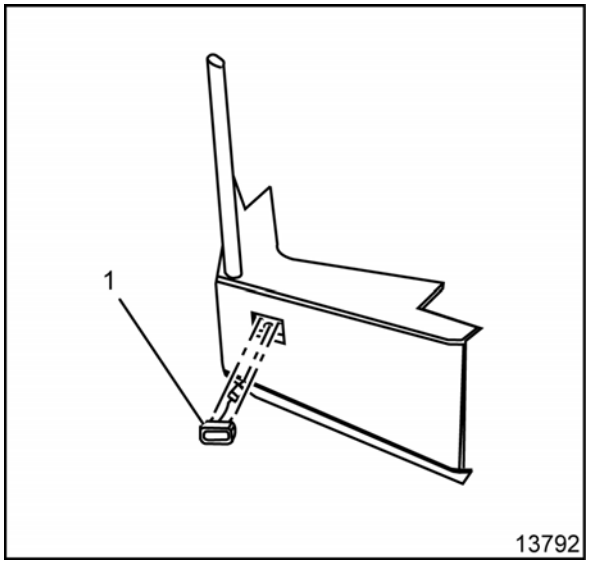


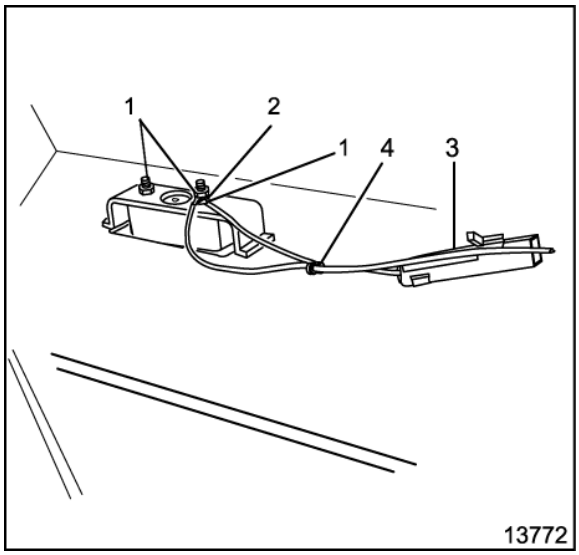
5. Remove the blackout (B/O) marker lamp assembly (1) from the bumper.



Installation Procedure

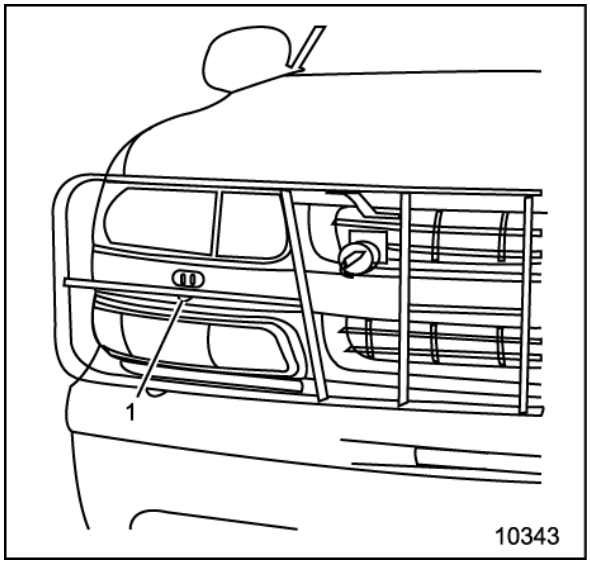
1. Install the marker lamp (1) into the front bumper opening.





Notice: Refer to Fastener Notice in Cautions and Notices.

2. Install the nuts (1) and the ground connector (2) onto the maker lamp studs.
   Tighten
   Tighten marker lamp nuts to 2 N•m (18 lb in).
3. Install the harness connector (3) to the marker lamp connector.
4. Secure the harness in the original mounting location using the wiring harness strap (4).
5. Connect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure in Engine Electrical.

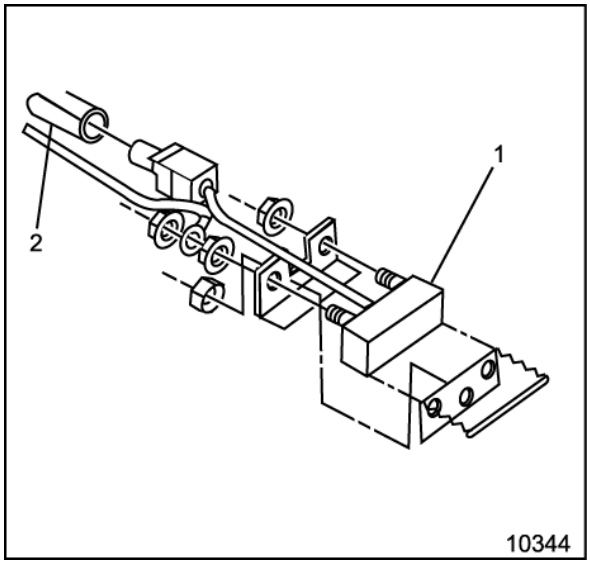


Marker Lamp Replacement – Front Blackout (B/O) (Utility)

Removal Procedure

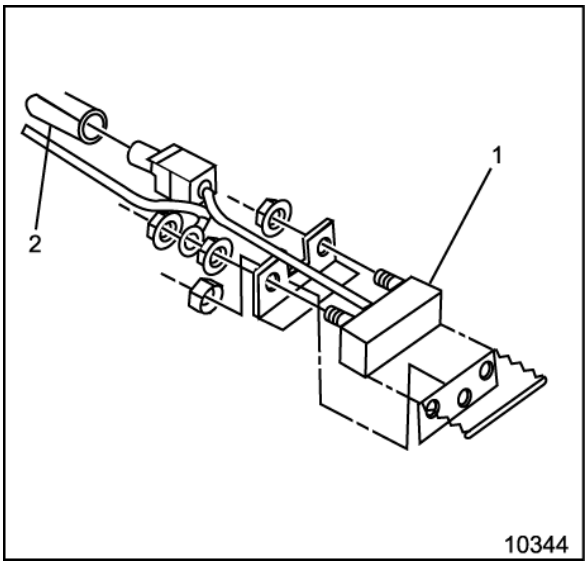
Caution: Refer to Battery Disconnect Caution in Cautions and Notices.

1. Disconnect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure in Engine Electrical.
2. Remove the bolt (1) on the brush guard and slide out the blackout (B/O) marker light assembly from the grille.



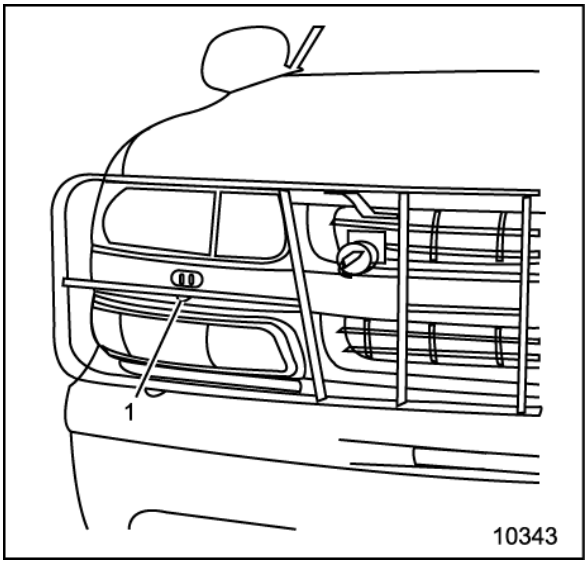
3. Remove the harness connector (2) by releasing the connector tab.
4. Remove the nut holding the ground lead to the lamp stud.
5. Remove the nuts holding the lamp to the mounting bracket.
6. Remove the blackout (B/O) marker lamp assembly (1).

Installation Procedure



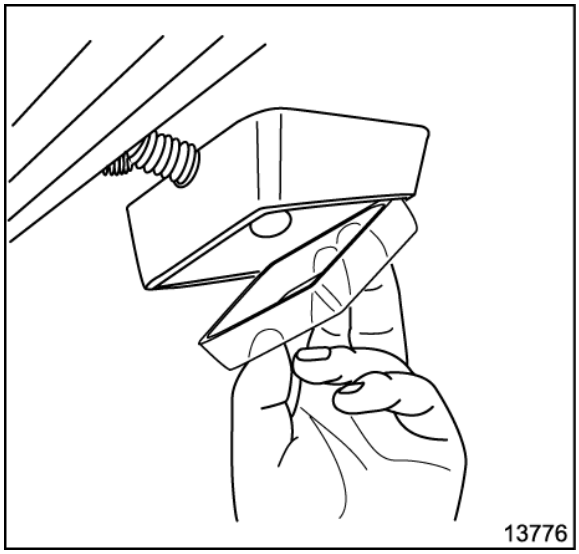
Notice: Refer to Fastener Notice in Cautions and Notices.

1. Install the mounting bracket to the blackout (B/O) marker lamp assembly (1).
   Tighten
   Tighten marker lamp nuts to 2 N•m (18 lb in).
2. Install the ground lead to the blackout (B/O) marker lamp stud.
   Tighten
   Tighten ground lead nut to 2 N•m (18 lb in).
3. Install the harness connector (2) to the marker lamp connector.



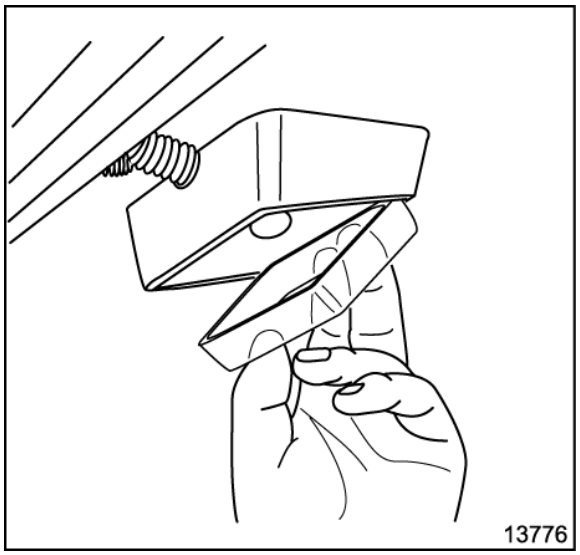
4. Install the marker lamp assembly into the opening in the grille and install the bolt (1) to the brush guard.
5. Connect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure in Engine Electrical.

Topper Dome Lamp Bulb Replacement



Removal Procedure

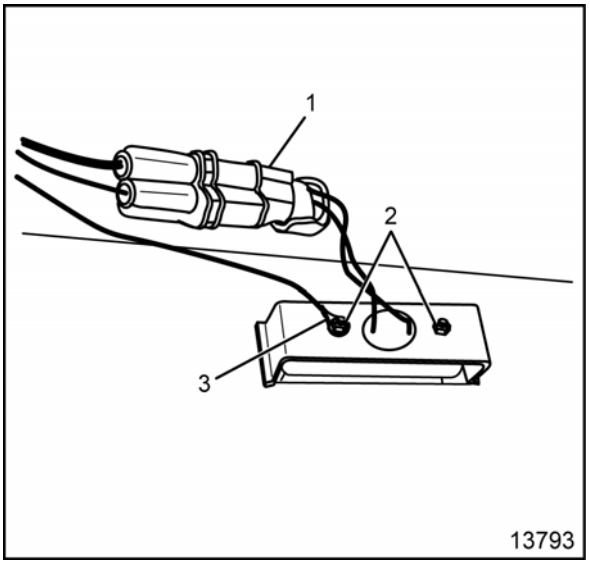
1. Press in on the sides of the lens to release the lens tabs.
2. Remove the bulb from the lamp socket.



Installation Procedure

Important: Use a standard 194 bulb for replacement.

1. Install the bulb into the lamp socket.
2. Install the lens into the lamp by pressing until fully seated.

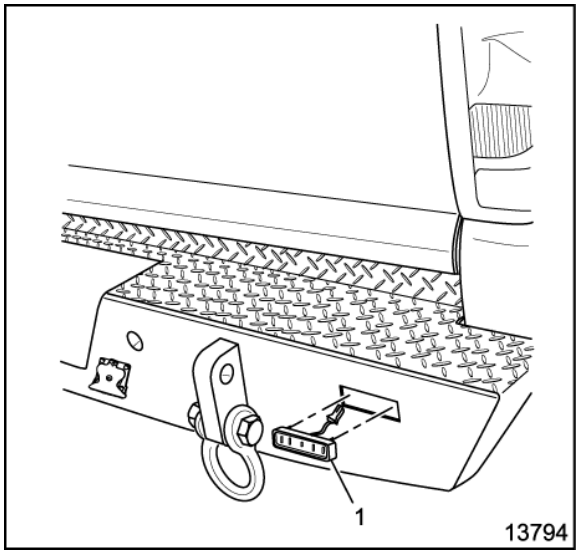


Marker Lamp Replacement – Rear (Pickup)

Removal Procedure

Caution: Refer to Battery Disconnect Caution in Caution and Notices.

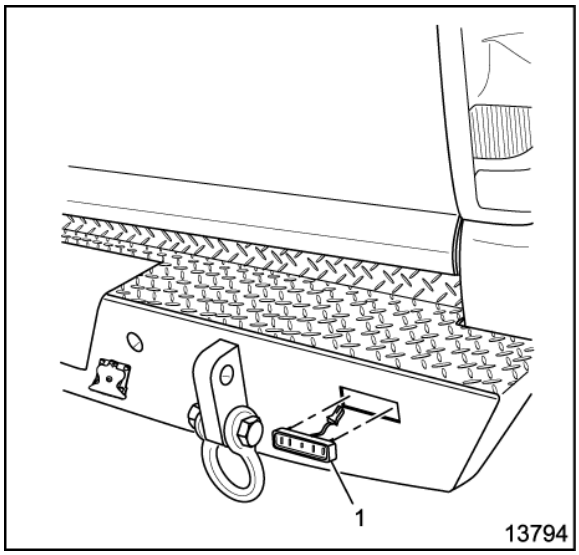
1. Disconnect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure in Engine Electrical.
2. Remove the wiring harness strap from the marker lamp harness.
3. Disconnect the marker lamp harness connector (1) by releasing the tab.
4. Remove the nuts (2) and the ground connector (3) from the rear of the bumper.



5. Remove the marker lamp (1) from the bumper.

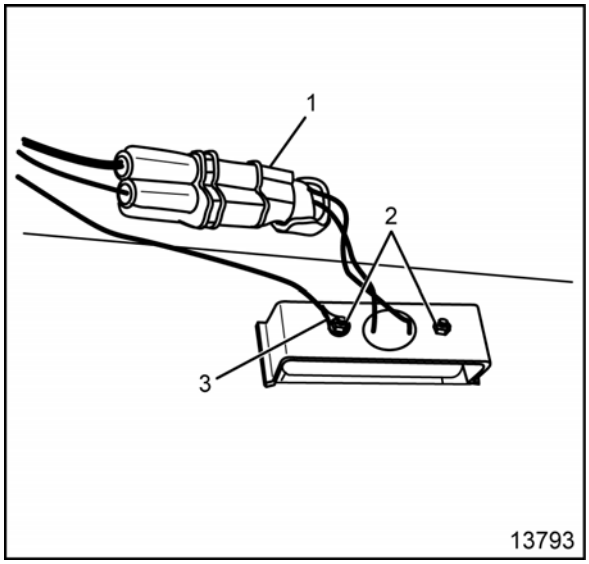
Installation Procedure

1. Position the marker lamp (1) onto the bumper.



Notice: Refer to Fastener Notice in Caution and Notices.

2. Install the nuts (2) and the ground connector (3) onto the mounting studs.
   Tighten
   Tighten the nuts to 2 N•m (18 lb in).
3. Connect the harness connector (1) to the marker lamp connector.
4. Install the harness into the original mounting location using the wiring harness strap.
5. Connect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure in Engine Electrical.

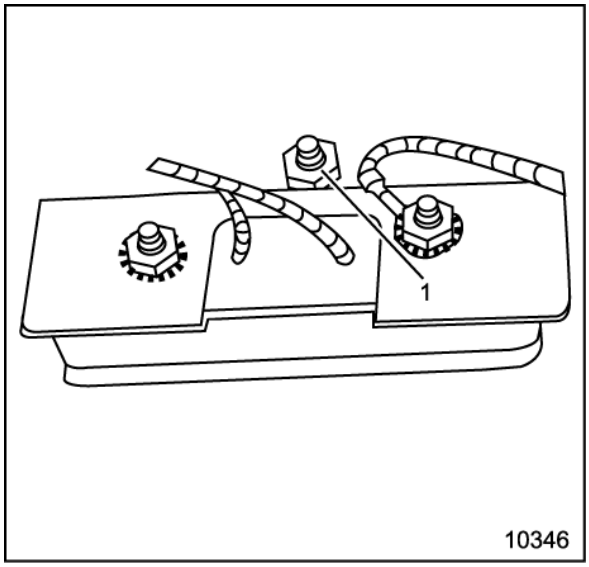


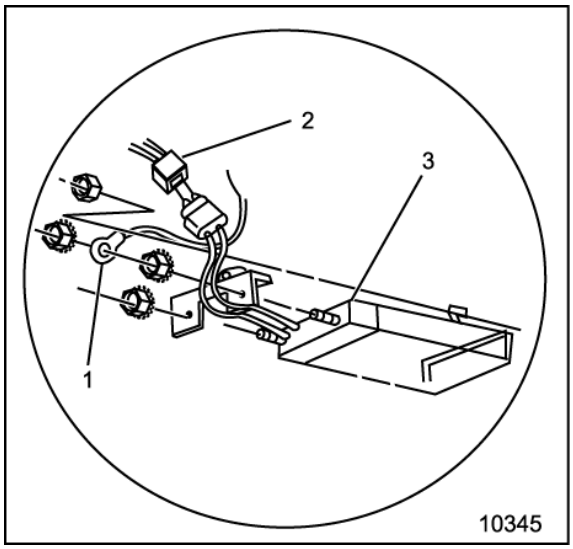
Marker Lamp Replacement – Rear (Utility)

Removal Procedure

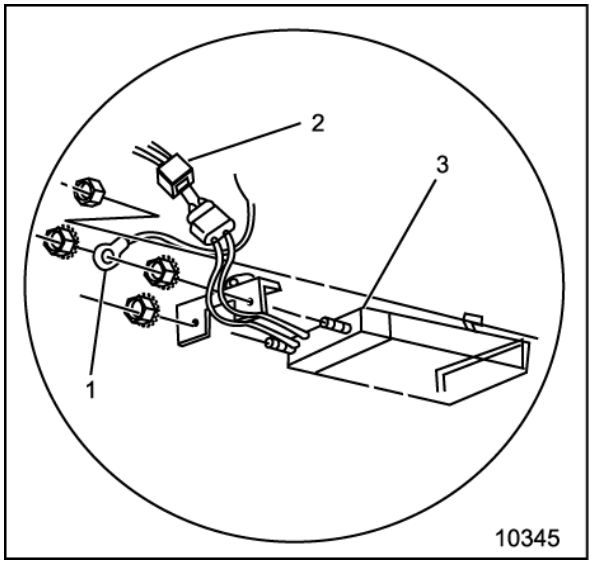
Caution: Refer to Battery Disconnect Caution in Cautions and Notices.

1. Disconnect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure in Engine Electrical.
2. Remove the nut (1) from the bracket and remove the marker lamp assembly.





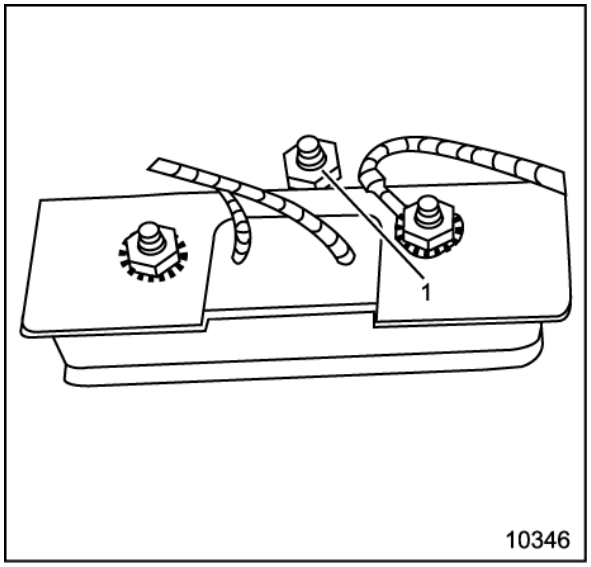
3. Disconnect the harness connector (2) by releasing the connector tab.
4. Remove the nut holding the ground lead (1) and the nut to the stud.
5. Remove the opposite nut holding the bracket to the other stud.
6. Remove the blackout (B/O) marker lamp assembly (3) from the bracket.



Installation Procedure

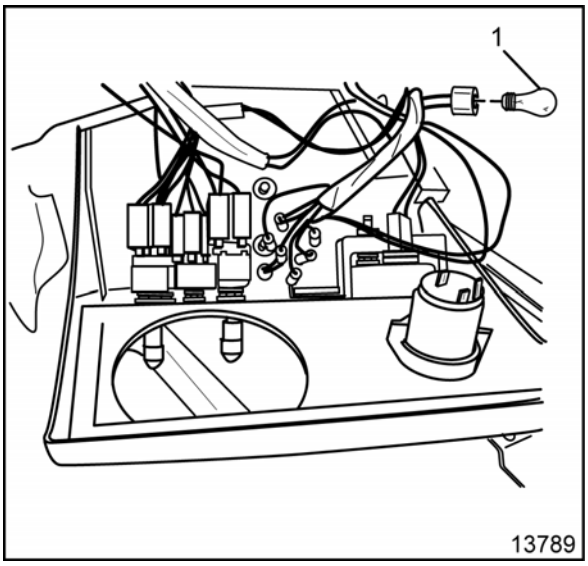
Notice: Refer to Fastener Notice in Cautions and Notices.

1. Install the marker lamp (3) to the bracket with nuts and tighten.
   Tighten
   Tighten the nuts to 2 N•m (18 lb in).
2. Install the ground lead to the stud with a nut and tighten.
   Tighten
   Tighten the nut to 2 N•m (18 lb in).
3. Connect the harness connector (2) to the lamp connector.



4. Install the marker lamp assembly into the opening in the bumper and tighten nut (1).
5. Connect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure in Engine Electrical.

Lamp Replacement – Voltmeter

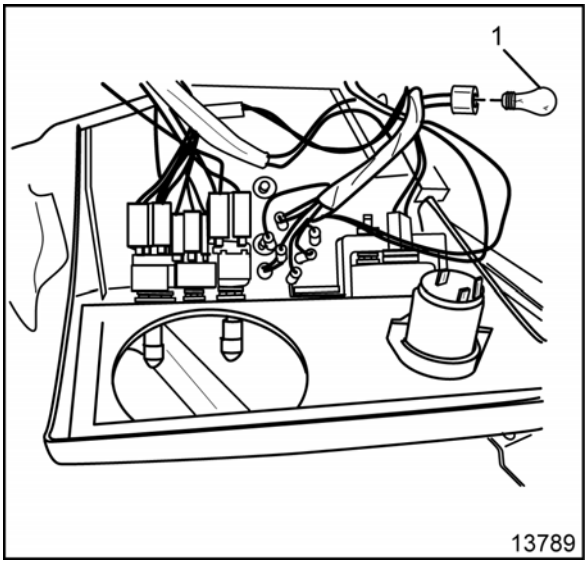


Removal Procedure

Caution: Refer to Battery Disconnect Caution in Caution and Notices.

1. Disconnect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure in Engine Electrical.
2. Remove the accessory panel. Refer to Accessory Panel Replacement in Instrument Panel, Gages and Console.
3. Remove the voltmeter lamp socket from the back of the voltmeter.
4. Remove the bulb (1) from the voltmeter socket.

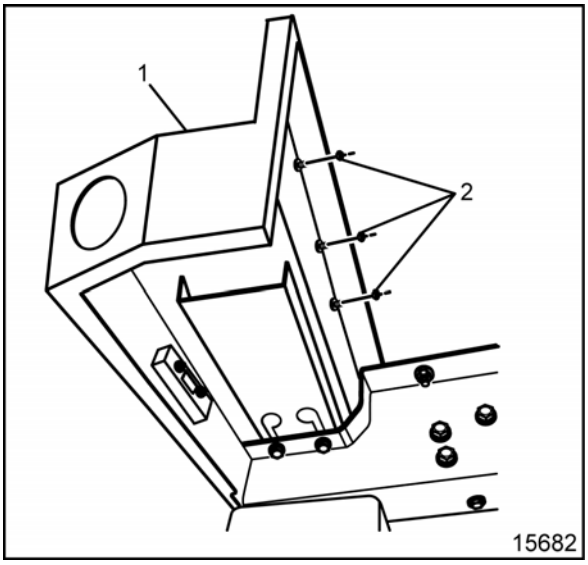
Installation Procedure



Important: Use a standard 194 bulb for replacement.

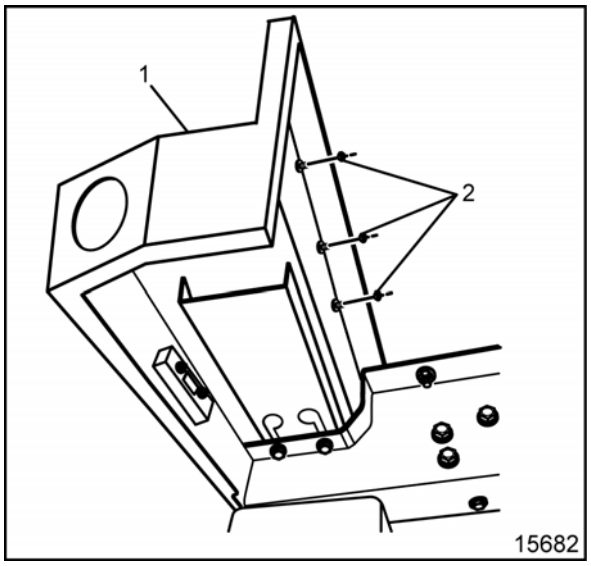
1. Install the bulb (1) into the voltmeter socket.
2. Install the lamp socket into the voltmeter.
3. Install the accessory panel. Refer to Accessory Panel Replacement in Instrument Panel, Gages and Console.
4. Connect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure in Engine Electrical.

Taillamp Replacement (Maintenance Body)



Removal Procedure

1. Ensure that the headlamp switch is in the OFF position.
2. Remove the nuts (2) from the rear bumper (1).
3. Remove the lamp from the rear bumper.
4. Disconnect the lamp from the wiring harness.

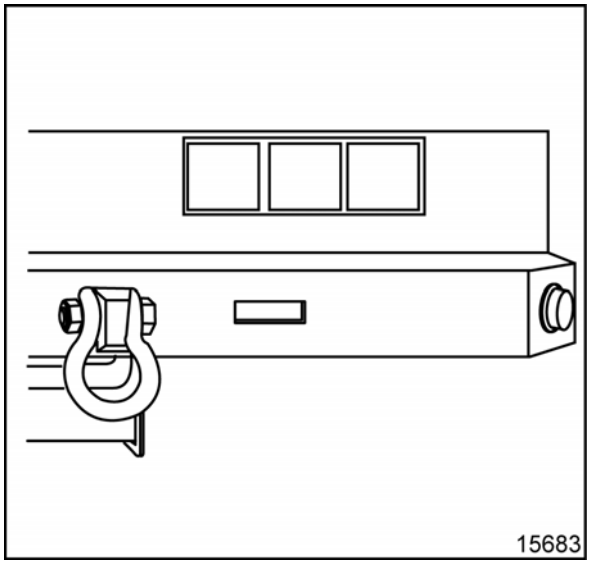


Installation Procedure

1. Install the wiring harness to the lamp.

Notice: Refer to Fastener Notice in Caution and Notices.

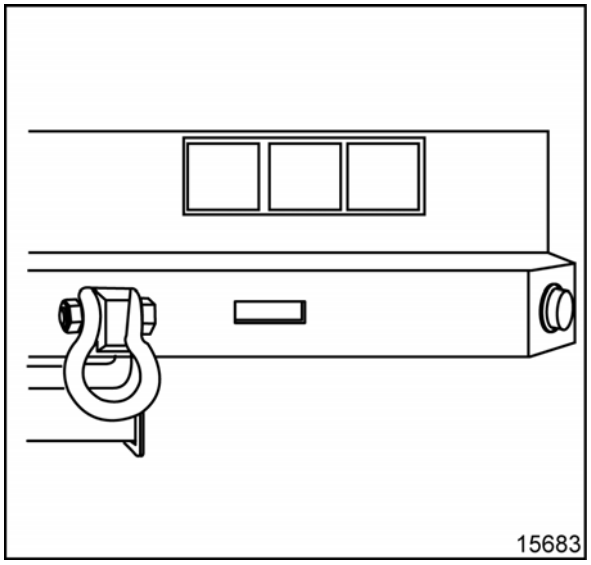
2. Install the lamp onto the rear bumper (1) and install nuts (2).
   Tighten
   Tighten the nuts to 27 N•m (20 lb ft).



Taillamp Bulb Replacement (Maintenance Body)

Removal Procedure

1. Ensure that the headlamp switch is in the OFF position.
2. Using your hands, peel the rubber gasket away from the sides of the lens.
3. Lift the lens off the lamp assembly.
4. Remove the bulb from the socket.



Installation Procedure

Important: Use the following bulbs for replacement:

- Park/stoplamp 1157
- Turn signal 1156
- Backup lamp 1156

1. Install bulb into the lamp socket.
2. Install the lens into the lens gasket.

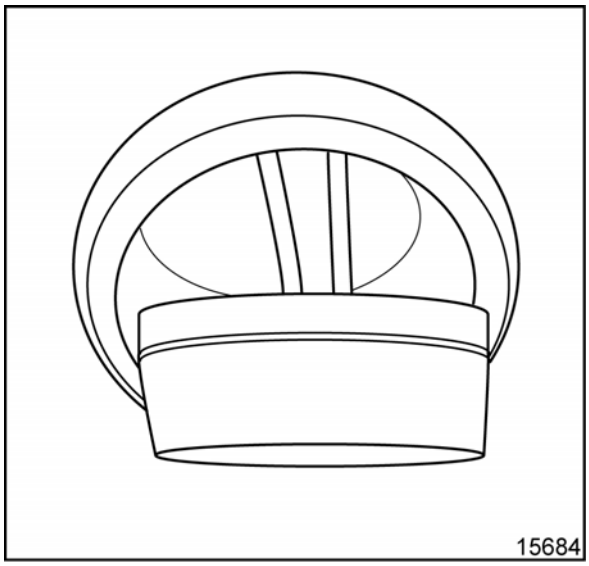
Important: Ensure that the lens is fully installed in the gasket.

Marker Lamp Replacement (Maintenance Body)

Removal Procedure

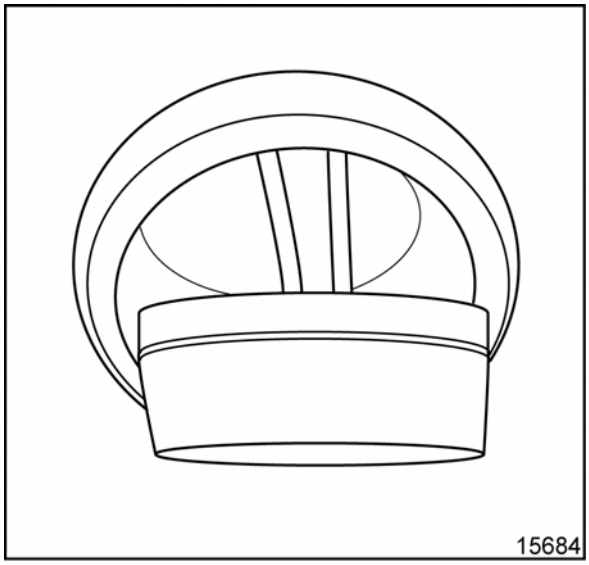
Important: The bulbs in the marker lamps are not replaceable and are serviced as an assembly.

1. Ensure that the headlamp switch is in the OFF position.
2. Using your hands, peel the lens out of the rubber gasket.
3. Disconnect the wire harness from the back of the lens.



Installation Procedure

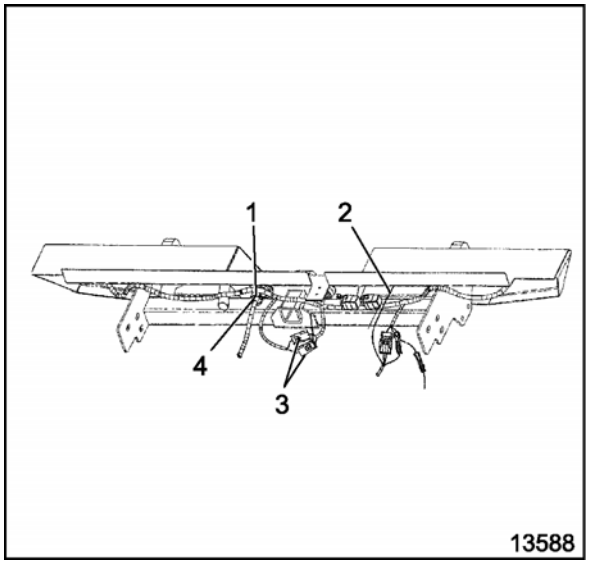
1. Connect the wire harness onto the lamp.
2. Install the lens into the rubber gasket.
3. Ensure that the lens is fully installed in the gasket.

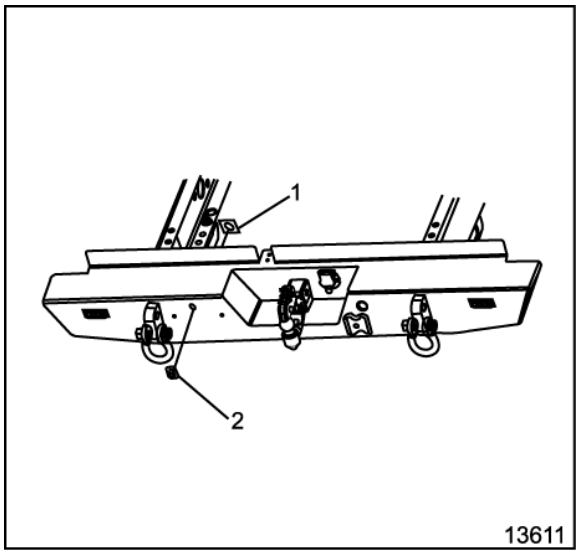


License Plate Lamp Replacement (Pickup)

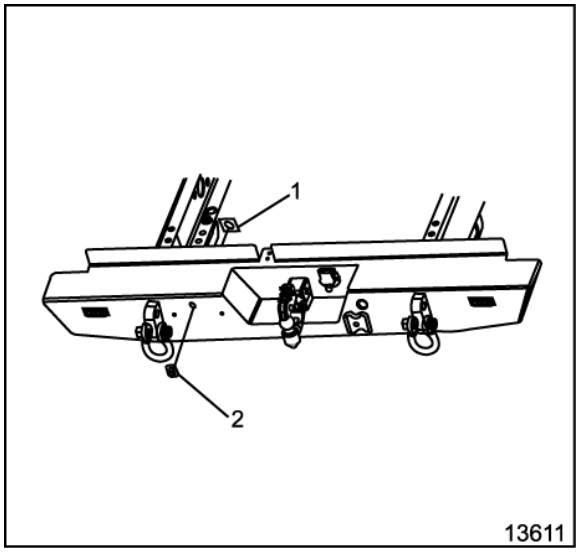
Removal Procedure

1. Ensure the headlamp switch is in the OFF position.
2. Remove the bulb socket (2) and bulb from the back of the lamp.





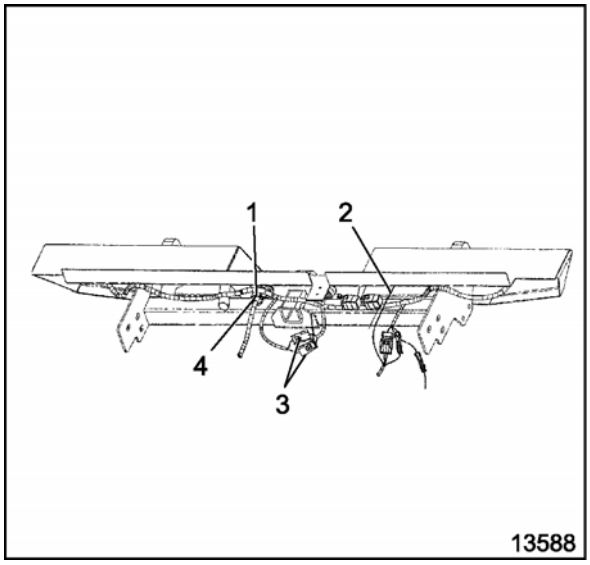
3. Slide the retainer clip (1) off of the license plate lamp (2).
4. Remove the license plate lamp (2) from the bumper.



Installation Procedure

Important: Use a standard 194 bulb for replacement.

1. Install the license plate lamp (2) into the opening of the bumper.
2. Hold the lamp and slide the retainer (1) onto the back of the lamp (2).

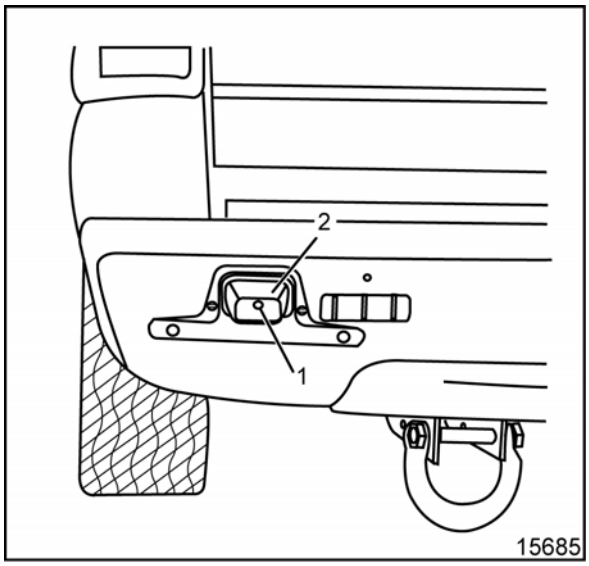


3. Install the bulb socket (2) and bulb to the back of the lamp.

License Plate Lamp Replacement (Utility)

Removal Procedure

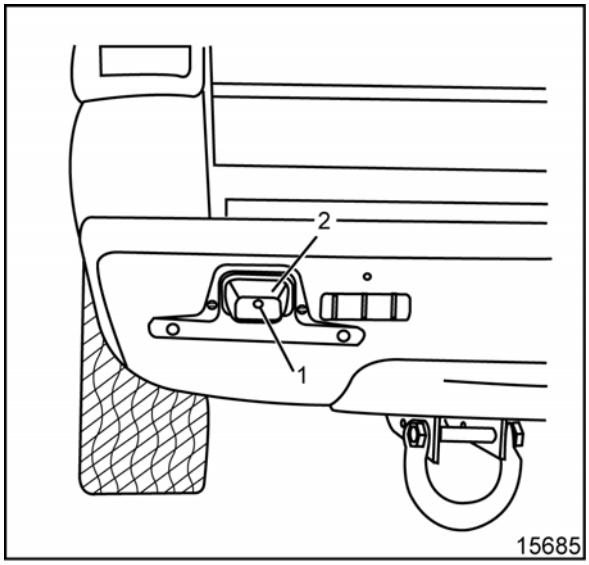
1. Ensure that the headlamp switch is in the OFF position.
2. Remove the screw (1) in the center of the license plate lamp and remove the lens cover (2) from the bracket.
3. Remove the bulb from the socket.



Installation Procedure

Important: Use a standard 194 bulb for replacement.

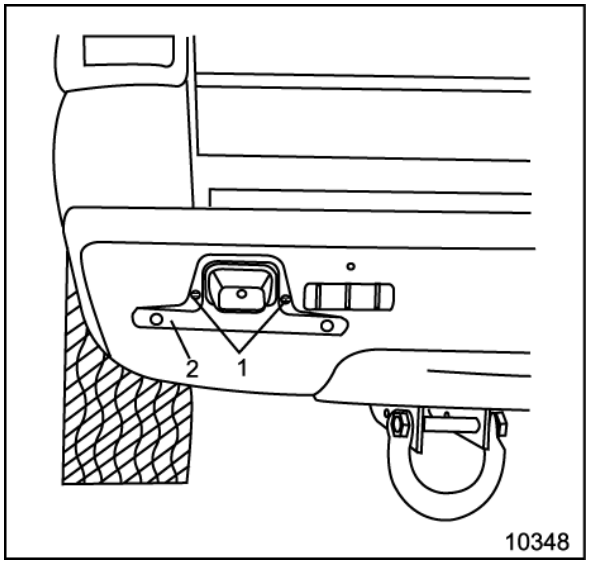
1. Install the bulb into the socket.
2. Install the lens cover (2) onto the license plate bracket and install the screw (1).

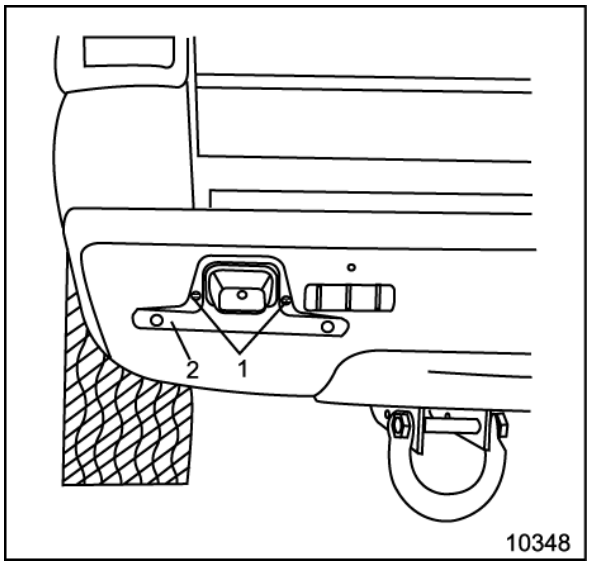


License Plate Bracket Replacement (Utility)

Removal Procedure

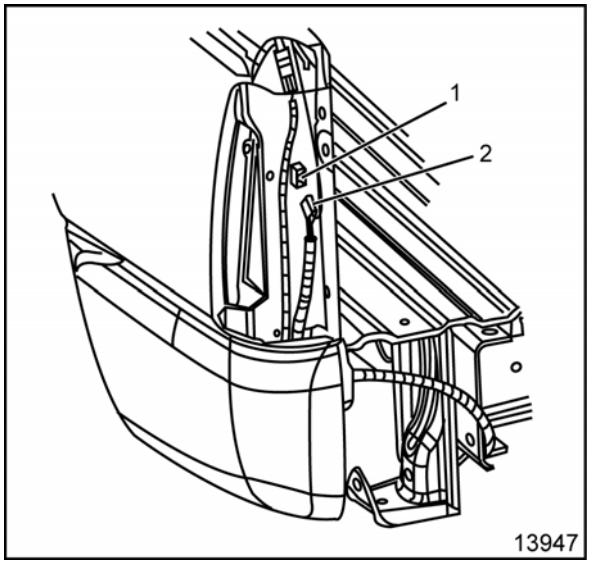
1. Remove the license plate from the bracket.
2. Disconnect the electrical connector from the bracket.
3. Remove the bolts (1) and nuts from the bracket.
4. Remove the bracket (2) from the bumper.





Installation Procedure

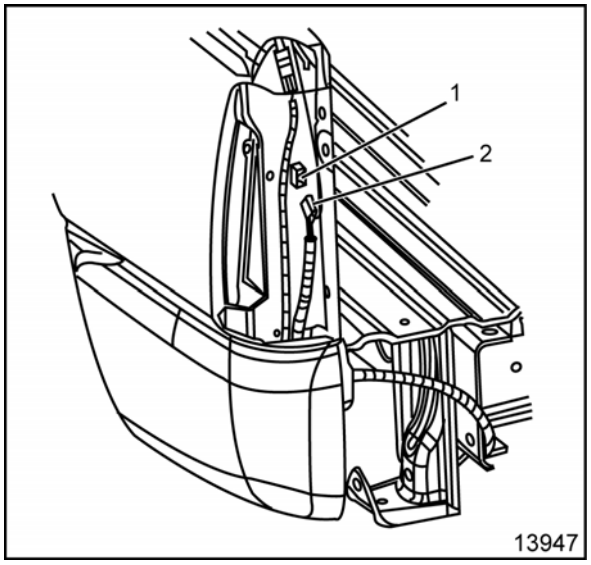
1. Install the bracket (2) onto bumper and align the holes.
2. Install the bolts (1) through the bracket and bumper into the nuts.
3. Connect the electrical connector.
4. Install the license plate onto the bracket.



Topper Dome Lamp Switch Replacement – Rear

Removal Procedure

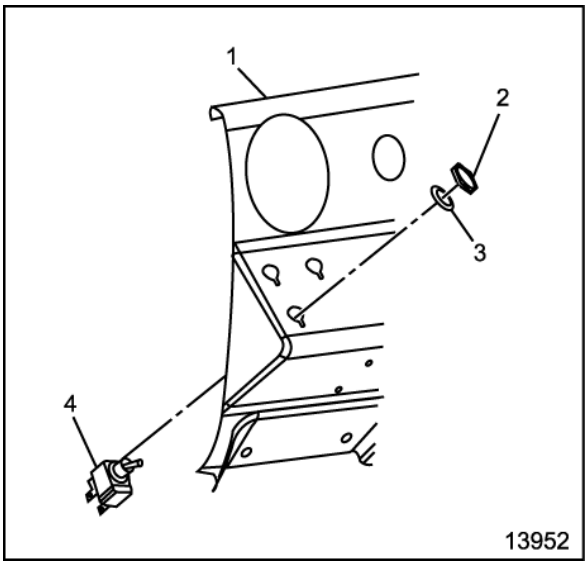
1. Remove the left rear tail/turn signal lamp. Refer to Tail/Turn Signal Lamp Replacement except step side in Lighting Systems in 2004 C/K Truck Service Manual.
2. Remove the connector (2) from the switch.
3. From inside the cargo area remove the nut from the switch.
4. Remove the switch (1) from the vehicle.



Installation Procedure

1. Install the switch (1) into the vehicle.
2. From inside the cargo area install the nut onto the switch.
3. Install the connector (2) onto the switch.
4. Install the left rear tail/turn signal lamp. Refer to Tail/Turn Signal Lamp Replacement except step side in Lighting Systems in the 2004 C/K Truck Service Manual.

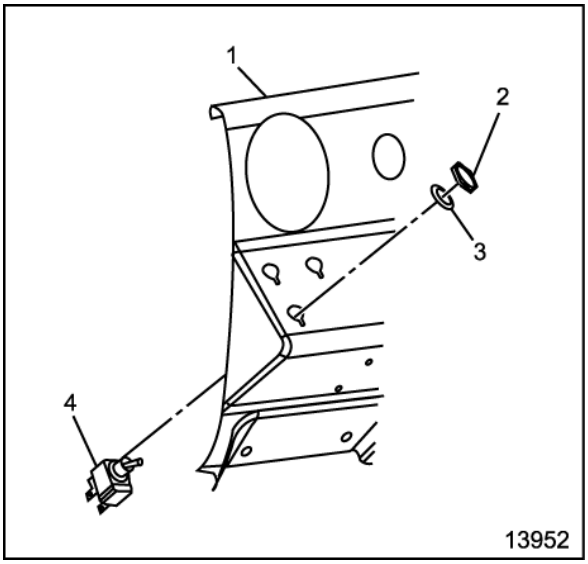
Topper Dome Lamp Switch Replacement – Front



Removal Procedure

Caution: Refer to Battery Disconnect Caution in Caution and Notices.

1. Disconnect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure in Engine Electrical.
2. Remove the accessory panel. Refer to Accessory Panel Replacement in Instrument Panel, Gages and Console.
3. Remove the nut (2) and washer (3) from the switch.
4. Remove the switch (4) from the panel (1).



Installation Procedure

1. Install the switch (4) into the panel (1).
2. Install the washer (3) and nut (2), and tighten.
3. Install the accessory panel. Refer to Accessory Panel Replacement in Instrument Panel, Gages and Console.
4. Connect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure in Engine Electrical.

Description and Operation

Blackout (B/O) Lighting Circuit Operation

Voltage for connector C8, the blackout (B/O) marker lamps, is supplied through the accessory voltage circuit YEL (243) located in the I/P relay center. From there the ORN (40) wire supplies voltage to the blackout (B/O) service switch. When the blackout (B/O) service switch is placed in blackout (B/O) mode, voltage is applied to the PNK (911) wire to inline 5A fuse. Voltage is then applied to the BRN/WHT (900) wire for front blackout (B/O) marker lamps and BRN/WHT (900) wire for rear blackout (B/O) marker lamps. Ground for the front blackout (B/O) marker lamps is supplied through G100M for the front and G903M and G902M for the rear.

The blackout (B/O) stoplamps voltage is supplied through the stop LP fuse ORN (1540) wire to the TCC/stoplamp switch at all times. When the brake pedal is depressed, the stoplamp switch is closed and powers the WHT (17) wire to the blackout (B/O) service switch. When in blackout (B/O) mode, voltage is applied from the DK GRN/WHT (902) wire to the blackout (B/O) stoplamps. The blackout (B/O) stoplamps receive constant ground through G903M and G902M.

Blackout (B/O) Lighting Description

This section focuses on the function and service of the blackout (B/O) headlamp, the front and rear blackout (B/O) marker lamps, and the service/blackout (B/O) lamp switch. All other lamps are covered in the 2004 C/K Truck Owner Manual. As military options the blackout (B/O) lamps provide a stealthy, low illumination alternative to standard lighting systems, also available on these vehicles. The blackout (B/O) headlamp is identical on these vehicles. The front blackout (B/O) marker lamps are mounted in the bumper of the pickup vehicle and on the brush guard of the utility vehicles. The rear blackout (B/O) marker lamps are arranged in the same relative positions on each of the rear bumpers.

The service/blackout (B/O) lamp switches, mounted at the lower center dash, control blackout (B/O) lamp and standard lamp functions. A pair of toggles operates these switches. The blackout (B/O) drive toggle is mounted on the right. When the service light toggle is moved up to the ON position it activates all service lights and enables all normal service light functions elsewhere to be turned ON if needed. When moved to the ALL OFF position this toggle shuts off all lamps and auxiliary lamps. When the switch is moved to blackout (B/O) ON only the blackout (B/O) lighting will work, which includes the blackout (B/O) markers, front and rear, and the blackout (B/O) headlamp. Within the rear marker lamps are separate color markers. Yellow will illuminate for the brakes and red will illuminate for drive mode. The front markers illuminate in yellow. (The horn is inoperative while the blackout (B/O) toggle is in the ON position.) All warning lamps in the I/P remain functional regardless of the toggle position. If the vehicle is parked for over 24 hours, place the service switch in the ALL OFF position.

To operate the blackout (B/O)/drive light switch pull it out and up to the ON position; this will activate the front blackout (B/O) headlamp. This will occur provided the service light/blackout (B/O) switch remains in the ON or down position. Pulling the left blackout (B/O) drive light switch out and down to the OFF position will turn it OFF. Releasing the switch from ON or OFF will cause it to return to the center position automatically.

The following Exterior/Interior lights function tables are for the service light/blackout (B/O) control switch and clarify under what conditions various exterior and interior lighting functions activate. Additional details are found in the 2004 C/K Truck Owner Manual.

Topper Dome Lamp Circuit Description

When the ignition switch is ON, voltage is supplied from the blackout (B/O) switch to the interior toggle switch on circuit 912 (ORN). The voltage leaves the switch on circuit 800 (BRN) or 803 (BRN/WHT) pending on the switches' position. The voltage on these circuits goes to the rear toggle switch then to the topper dome lamp. The lamp is ground on the CHMSL circuit.

Topper Dome Lamp Description

The topper dome lamp is controlled by two 3-way switches and a lamp mounted switch. The interior switch is mounted in the accessory panel and the other is mounted on the left rear of the pickup bed. The switch mounted on the lamp must be in the ON position for the two 3-way switches to operate the lamp.

Voltmeter Lamp Circuit Description

When the headlamp switch is in the ON position voltage is applied through the BRN 9 wire and is grounded through the BLK 150 wire.

Voltmeter Lamp Description

The voltmeter lamp provides illumination to the voltmeter mounted in the accessory panel.

Function Tables

Exterior Lights

Exterior Lamp or Device	Service Switch	Blackout (B/O) Drive Light Switch
Headlamps and Taillamps	ON	OFF
Fog Lamps	ON	OFF
Parking Lamps	ON	OFF
Front/Rear Side Marker Lamps	ON	OFF
Marker Lamps: Roof, Fender and Endgate	ON	OFF
Stoplamps	ON	OFF
Back-up Lamps	ON	OFF
License Plate Lamp	ON	OFF
Front/Rear Turn Signals	ON	OFF
Hazard Warning Lamps	ON	ON/OFF
Cargo Lamp	ON	OFF
Horn	ON	OFF
Front/Rear Blackout (B/O) Marker Lamps	B/O	ON/OFF
Blackout (B/O) Stoplamps	B/O	ON/OFF
Blackout (B/O) Drive Lamp (Headlamp)	B/O	ON

Interior Lights

Interior Lamp or Device	Service Switch	Blackout (B/O) Drive Light Switch
Instrument Panel/Switch Illumination	ON	OFF
Radio/Clock ILLUMINATION	ON	OFF
Headlamp High-Beam Indicator	ON	OFF
Turn Signal/Hazard Warning Indicators	ON	OFF
Four-Wheel-Drive Indicator	ON	OFF
Dome/Courtesy Lamps	ON	OFF
Glove Compartment Lamp	ON	OFF
Underhood Lamp	ON	OFF
Warning Chime: Headlamps On, Safety Belt and Key in Ignition	ON	ON/OFF

Interior Lights

Mechanical Device	Service Switch	Blackout (B/O) Drive Light Switch
Brake-Transmission Shift Interlock (BTSI)	ON	ON/OFF
Torque Converter Lockup Clutch	ON	ON/OFF

BLANK

Instrument Panel, Gages and Console

Specifications

Fastener Tightening Specifications

Application	Specification	
	Metric	English
Accessory Panel Bolts	8 N•m	71 lb in
Blackout (B/O) Switch Nuts	2.8 N•m	24 lb in
Voltmeter Nuts	2.8 N•m	24 lb in

BLANK

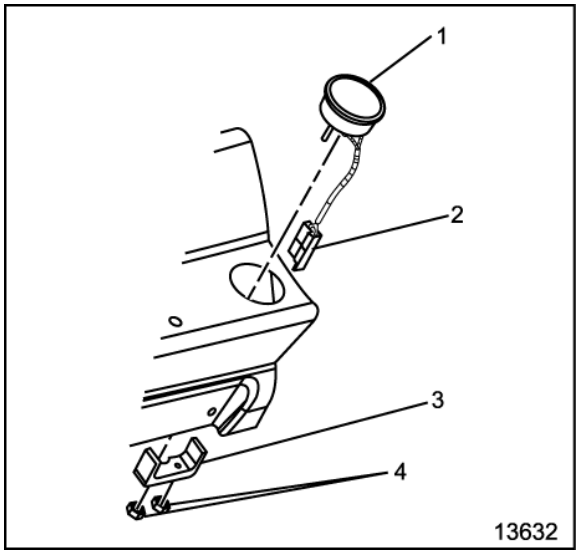
Repair Instructions

Voltmeter Replacement

Removal Procedure

Caution: Refer to Battery Disconnect Caution in Cautions and Notices.

1. Disconnect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure in Engine Electrical.
2. Remove the accessory panel. Refer to Accessory Panel Replacement.
3. Remove the nuts (4) from the back of the voltmeter.
4. Remove the voltmeter bracket (3) and remove the voltmeter (1) from the panel.

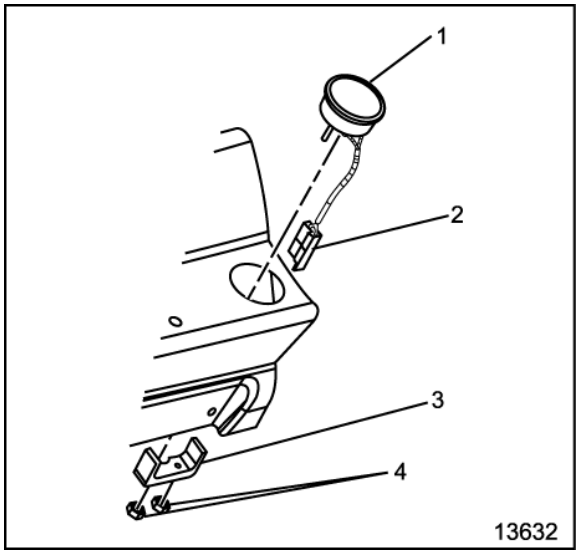


Installation Procedure

1. Install the voltmeter (1) into the panel opening.
2. Install the bracket (3) on the back of the voltmeter.

Notice: Refer to Fastener Notice in Cautions and Notices.

3. Install the nuts (4) on the voltmeter studs.
   Tighten
   Tighten nuts to 2.8 N•m (24 lb in).
4. Install the accessory panel. Refer to Accessory Panel Replacement.
5. Connect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure in Engine Electrical.

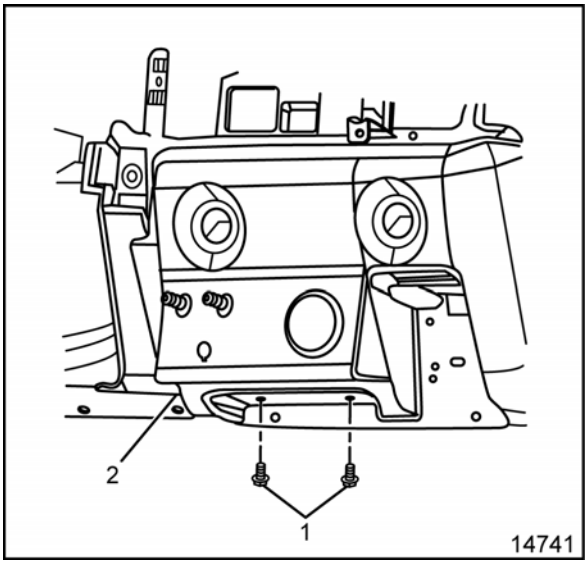


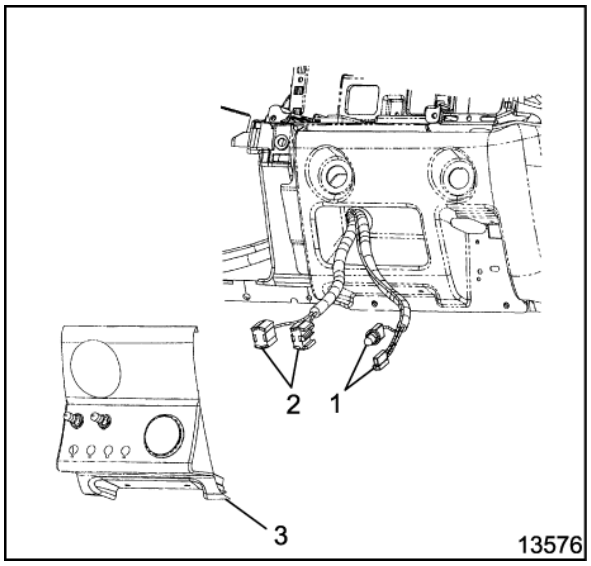
Accessory Panel Replacement

Removal Procedure

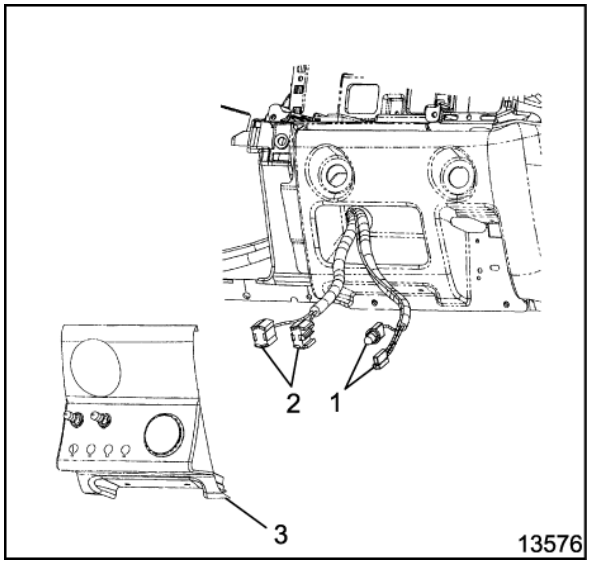
Caution: Refer to Battery Disconnect Caution in Cautions and Notices.

1. Disconnect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure in Engine Electrical.
2. Remove the fasteners (1) from the panel.
3. Move the panel (2) out far enough to gain access to the harness connections.



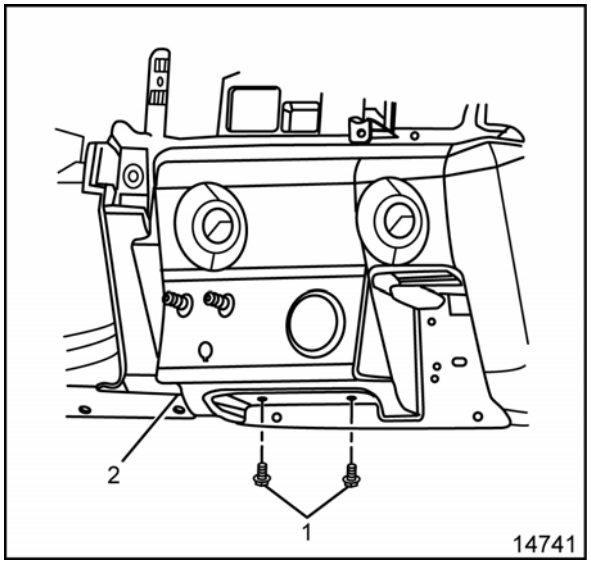


4. Disconnect the 24V meter bulb and harness connectors (1) from the meter.
5. Disconnect the blackout (B/O) harness connectors (2) from the switches.
6. Remove the panel (3) from the vehicle.
7. Remove the parts from the accessory panel. Refer to Voltmeter Replacement or Blackout (B/O) Switch Replacement.



Installation Procedure

1. Install the parts removed from the accessory panel. Refer to Voltmeter Replacement or Blackout (B/O) Switch Replacement.
2. Install the connectors (2) to the blackout (B/O) switches.
3. Install the connector and bulb (1) to the 24V meter.



4. Install the switch panel (2) onto the dash.

Notice: Refer to Fastener Notice in Cautions and Notices.

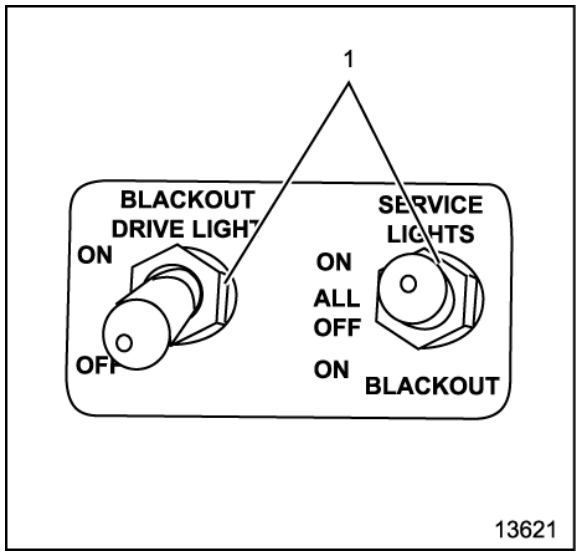
5. Install the fasteners (1) and tighten.
   Tighten
   Tighten switch panel bolts to 8 N•m (71 lb in).

Blackout (B/O) Switch Replacement

Removal Procedure

Caution: Refer to Battery Disconnect Caution in Cautions and Notices.

1. Disconnect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure in Engine Electrical.
2. Remove the accessory panel. Refer to Accessory Panel Replacement.
3. Remove the nuts (1) and washers holding the blackout (B/O) switches.
4. Remove the keyed washers from the accessory panel and pull the switches out.

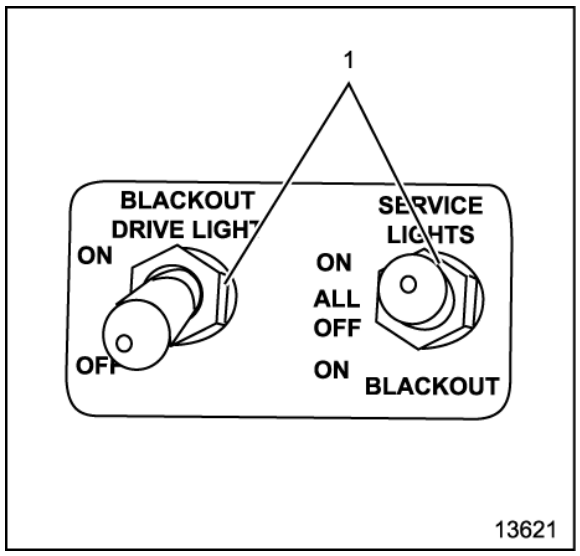


Installation Procedure

1. Install the switches through the accessory panel.
2. Install the keyed washers on the switches.

Notice: Refer to Fastener Notice in Cautions and Notices.

3. Install the 2 washers and nuts (1) on the panel.
   Tighten
   Tighten the 2 nuts to 2.8 N•m (24 lb in).
4. Install the accessory panel. Refer to Accessory Panel Replacement in Instrument Panel.
5. Connect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure in Engine Electrical.



Description and Operation

Instrument Panel and Gages Description

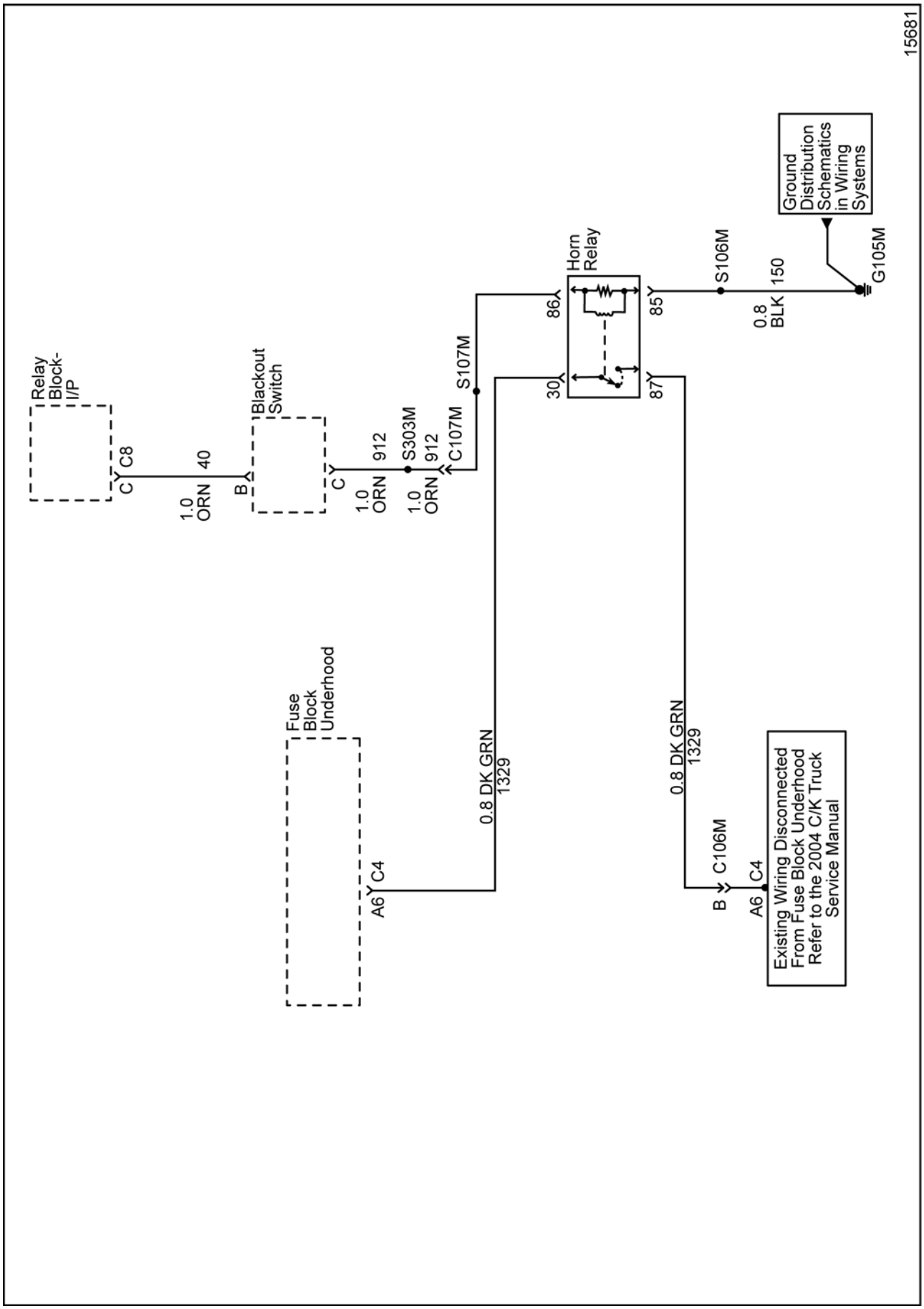
The instrument panel has been modified with an accessory panel mounted below the accessory power outlets. This panel houses the blackout (B/O) lighting auxiliary switches and 24V meter. The instrument panel houses auxiliary harnesses as well as standard indicators.

Some modifications have been made to the instrument panel to accommodate auxiliary harness connections and convenience/fuse centers.

Horns

Schematic and Routing Diagrams

Horns


15681
Relay Block-I/P
C8
C
40
1.0 ORN
B
Blackout Switch
C
1.0 ORN
912
S303M
912
1.0 ORN
C107M
S107M
86
30
Horn Relay
85
87
S106M
0.8 BLK
150
G105M
Ground Distribution Schematics in Wiring Systems
Fuse Block Underhood
A6
C4
0.8 DK GRN
1329
0.8 DK GRN
1329
B
C106M
A6
C4
Existing Wiring Disconnected From Fuse Block Underhood Refer to the 2004 C/K Truck Service Manual

Diagnostic Information and Procedures

Symptom List

Refer to a symptom diagnostic procedure from the following list in order to diagnose the symptom:

- Horns Inoperative
- Horns Operate in Blackout (B/O) Mode

Horns Inoperative

Step	Action	Yes	No
Schematic Reference: Horn Schematics			
1	Did you review Horns Description and Operation?	Go to Step 2	Go to Description and Operation
2	Depress the horn switch. Does either horn operate?	Go to Horns Inoperative – One Horn in Horns of the 2004 C/K Truck Service Manual	Go to Step 3
3	1. Remove the horn interrupt relay. 2. Connect a jumper between terminal 30 and 87 of the relay block. Does either horn operate?	Go to Step 4	Go to Horns Inoperative in Horns of the 2004 C/K Truck Service Manual
4	Connect a test lamp between terminal 86 of the relay block and ground. Does the test lamp illuminate?	Go to Step 6	Go to Step 5
5	Connect a test lamp between terminal C of the blackout (B/O) service switch and ground. Does the test lamp illuminate?	Go to Step 7	Go to Step 8
6	Connect a test lamp between terminal 85 of the relay block and ground. Does the test lamp illuminate?	Go to Step 9	Go to Step 10
7	Repair the open or high resistance in the (ORN) circuit 912. Did you complete the repair?	Go to Step 13	—
8	Connect a test lamp between terminal B of the blackout (B/O) service switch and ground. Does the test lamp illuminate?	Go to Step 11	Go to Step 12
9	Repair the open or high resistance in the (BLK) circuit 150. Did you complete the repair?	Go to Step 13	—
10	Replace the horn interrupt relay. Did you complete the repair?	Go to Step 13	—
11	Replace the blackout (B/O) service switch. Refer to Blackout (B/O) Switch Replacement in Instrument Panel, Gages and Console. Did you complete the replacement?	Go to Step 13	—

Horns Inoperative (cont'd)

Step	Action	Yes	No
12	Repair the open or high resistance in the (ORN) circuit 40. Did you complete the repair?	Go to Step 13	—
13	Verify the system operation. Do the horns operate properly?	System OK	Go to Step 2

Horns Operate in Blackout (B/O) Mode

Step	Action	Yes	No
Schematic Reference: Horn Schematics			
1	Did you review Horns Description and Operation?	Go to Step 2	Go to Description and Operation
2	Connect a test lamp between terminal 86 of the horn interrupt relay block and ground. Does the test lamp illuminate?	Go to Step 4	Go to Step 3
3	Replace the horn interrupt relay. Did you complete the replacement?	Go to Step 7	—
4	1. Disconnect the blackout (B/O) service switch. 2. Connect a test lamp between cavity C of the blackout (B/O) switch connector and ground. Does the test lamp illuminate?	Go to Step 6	Go to Step 5
5	Replace the blackout (B/O) service lamp switch. Refer to Blackout (B/O) Switch Replacement in Instrument Panel, Gages and Console. Did you complete the replacement?	Go to Step 7	—
6	Repair the short to voltage in the (ORN) circuit 912. Did you complete the repair?	Go to Step 7	—
7	Verify the system operation. Do the horns operate properly?	System OK	Go to Step 2

Description and Operation

Horn with Blackout (B/O) Control Circuit Operation

Voltage is applied at all times to the horn relay through the 15A horn fuse in the underhood fuse block. The blackout (B/O) service drive switch is used to control the horn relay. Power is applied through ORN (circuit 40) to the blackout (B/O) service drive switch, which is normally a closed switch. When the horn switch is depressed, the horn switch contacts close, providing a ground to the coil of the horn relay. When the coil of the relay is grounded, the relay energizes and the contacts close, applying battery voltage directly to the LH and RH horn. Because the horns are grounded at ground (G100) the horns will sound as long as the horn switch is depressed.

The blackout (B/O) service drive switch is used to disable the horn relay when placed in the blackout (B/O) mode. When the blackout (B/O) service drive switch is in the ON position, power to the horn relay is disrupted leaving the horns inoperative.

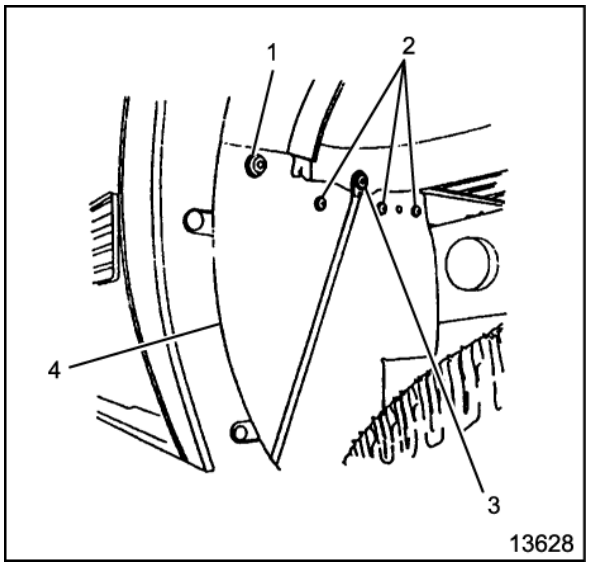
BLANK

Exterior Trim

Specifications

Fastener Tightening Specifications

Application	Specification	
	Metric	English
Mud Flap Brace Bolts	25 N•m	18 lb ft
Mud Flap Screws	4 N•m	35 lb in



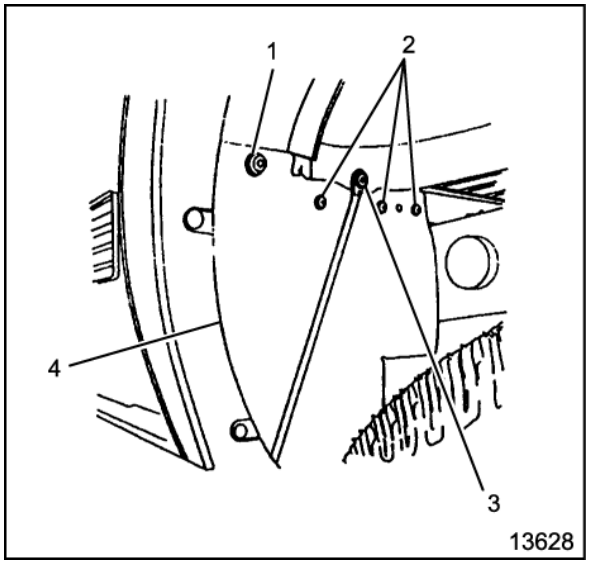
Repair Instructions

Rear Mud Flap Replacement

Removal Procedure

Caution: Refer to Vehicle Lifting Caution in Cautions and Notices.

1. Raise and support the vehicle.
2. Remove the brace bolt (3).
3. Remove the plastic retainer (1).
4. Remove the screws (2).
5. Remove the mud flap (4) from the vehicle.

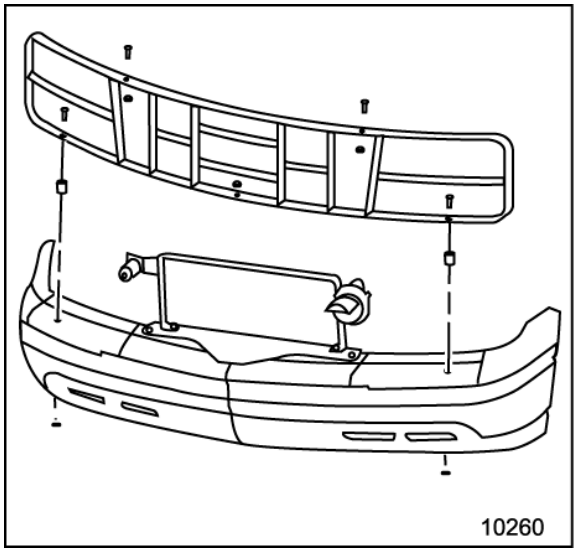


Installation Procedure

1. Install the mud flap (4) to the vehicle.
2. Install the plastic retainer (1).

Notice: Refer to Fastener Notice in Cautions and Notices.

3. Install the brace bolt (3).
   Tighten
   Tighten the brace bolt to 25 N•m (18 lb ft).
4. Install the screws (2).
   Tighten
   Tighten the screws to 4 N•m (35 lb in).
5. Remove the supports and lower the vehicle.

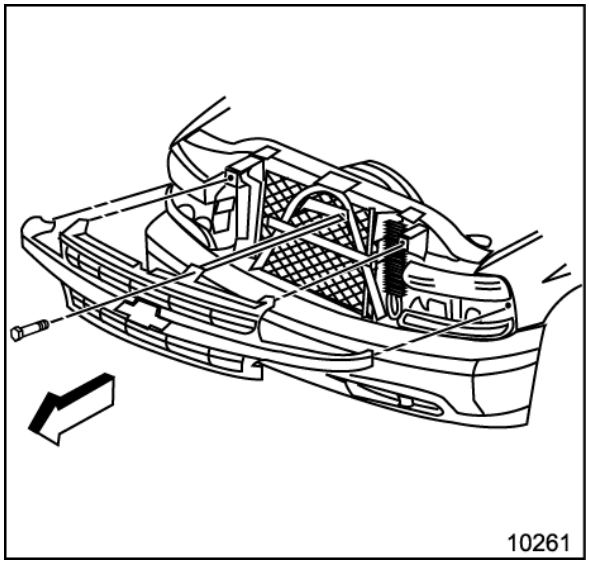


Radiator Grille Replacement

Removal Procedure

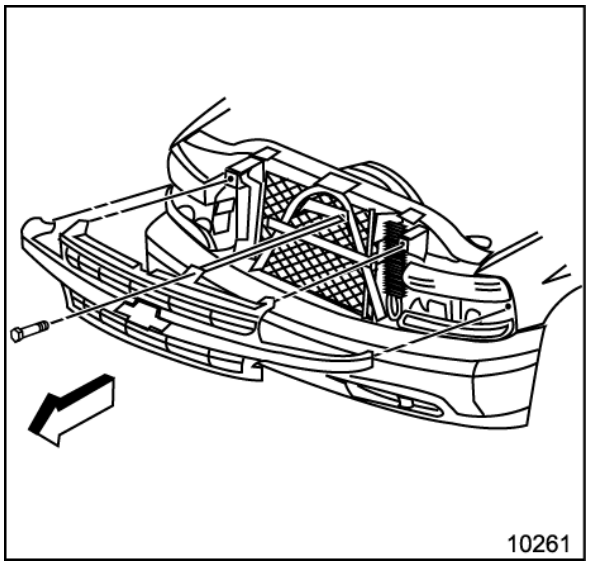
1. Remove the radiator grille brush guard. Refer to Radiator Grille Brush Guard Replacement (Utility) in Bumpers.
2. Remove the upper air baffle.

3. Release the fasteners holding the radiator grille to the radiator support.
4. Remove the radiator grille.

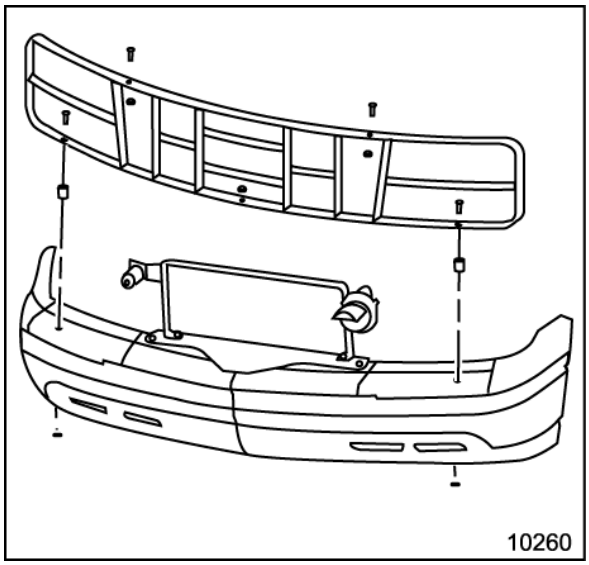


Installation Procedure

1. Paint the new radiator grille. Refer to Paint Codes in Paint/Coatings.
2. Install the radiator grille and bolts.
3. Install the upper grille baffle.



4. Install the radiator grille brush guard. Refer to Radiator Grille Brush Guard Replacement (Utility) in Bumpers.



Description and Operation

Exterior Trim Description

Mud Flaps

The military vehicles may be equipped with mud flaps at the front of the rear wheel openings to prevent brake damage when exposed to off road conditions.

Radiator Grille

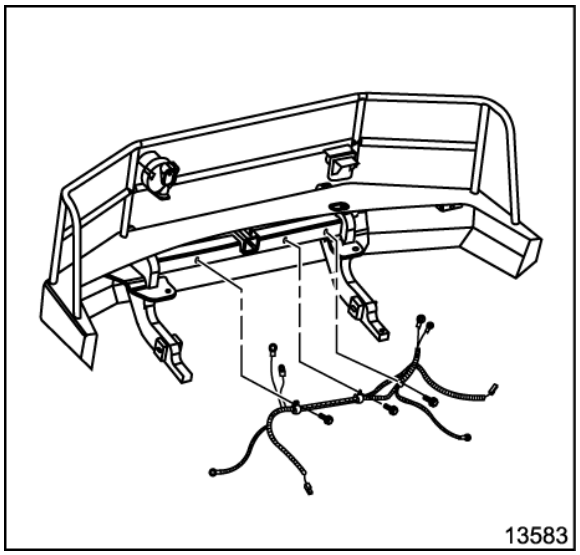
The radiator grille has been modified to accept the blackout (B/O) headlamp, marker lamps and the slave start receptacle. The front emblem has been removed and the grille is painted.

Bumpers

Specifications

Fastener Tightening Specifications

Application	Specification	
	Metric	English
Front Bumper Bracket Bolts (Utility)	85 N•m	63 lb ft
Front Bumper Center Bolts	122 N•m	90 lb ft
Front Bumper Frame Brace Bolts (Utility)	55 N•m	41 lb ft
Front Bumper Lower Support Bolts	77 N•m	57 lb ft
Front Bumper Upper Support Bolts	31 N•m	23 lb ft
Front Clevis Bolts	200 N•m	148 lb ft
Front Clevis/Tie Down Support Bolts (Utility)	80-95 N•m	59-70 lb ft
Radiator Grille Brush Guard Bolts (Utility)	88 N•m	65 lb ft
Rear Bumper Bolts (Maintenance Body)	79 N•m	59 lb ft
Rear Bumper Brace Bolts (Utility)	90 N•m	66 lb ft
Rear Bumper Frame Bolts (Utility)	90 N•m	66 lb ft
Rear Bumper Lower Bolts (Maintenance Body)	79 N•m	59 lb ft
Rear Bumper Reinforcement Bar Bolts (Maintenance Body)	68 N•m	50 lb ft
Rear Bumper Reinforcement to Bumper Bolts	79 N•m	59 lb ft
Rear Bumper Reinforcement to Frame Bolts	117 N•m	87 lb ft
Rear Bumper Side Frame Bolts	117 N•m	87 lb ft
Rear Bumper Side Frame Bolts (Maintenance Body)	117 N•m	87 lb ft
Rear Bumper Side Reinforcement Bolts	79 N•m	59 lb ft
Rear Bumper Tie Down Plate Bolts (Maintenance Body)	79 N•m	59 lb ft
Rear Clevis Bolts	200 N•m	148 lb ft
Rear Clevis/Tie Down Support Side Bolts (Utility)	77 N•m	57 lb ft
Rear Clevis/Tie Down Support Vertical Bolt (Utility)	102 N•m	75 lb ft
Slave Receptacle Harness Connections	6 N•m	53 lb in
Slave Receptacle Mounting Bolts	8 N•m	71 lb in



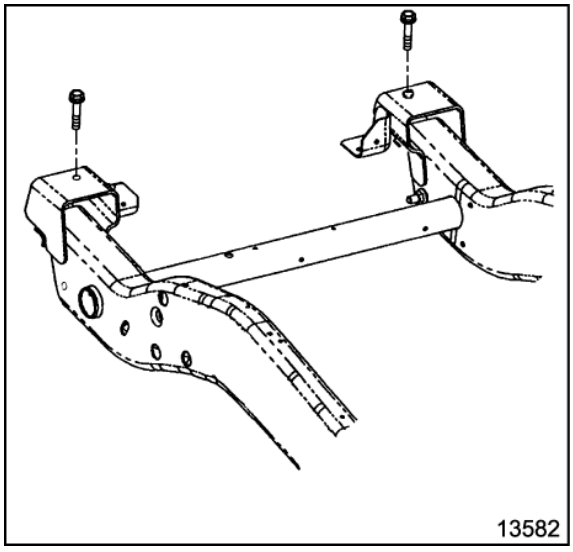
Repair Instructions

Bumper Replacement – Front

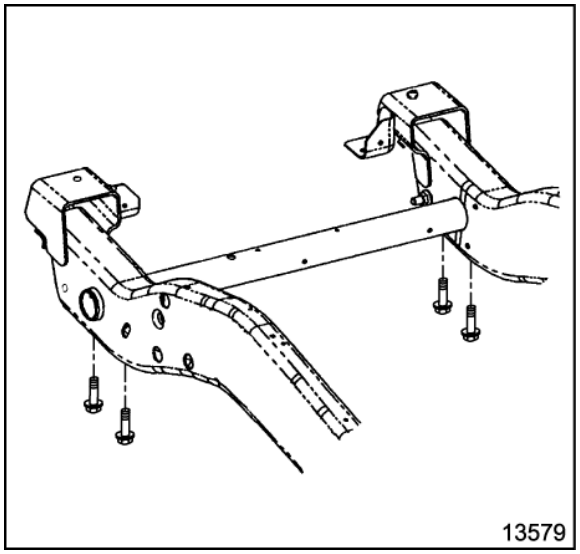
Removal Procedure

Caution: Refer to Battery Disconnect Caution in Cautions and Notices.

1. Disconnect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure in Engine Electrical.
2. Remove the blackout (B/O) headlamp. Refer to Headlamp Replacement Blackout (B/O) (Pickup) in Lighting Systems.
3. Remove the slave receptacle. Refer to Slave Receptacle Replacement.
4. Remove the blackout (B/O) marker lamp. Refer to Marker Lamp Replacement – Front Blackout (B/O) (Pickup) in Lighting Systems.
5. Remove the 3 bolts and the 3 clamps securing the slave receptacle harness and the blackout (B/O) harness to the bumper assembly.

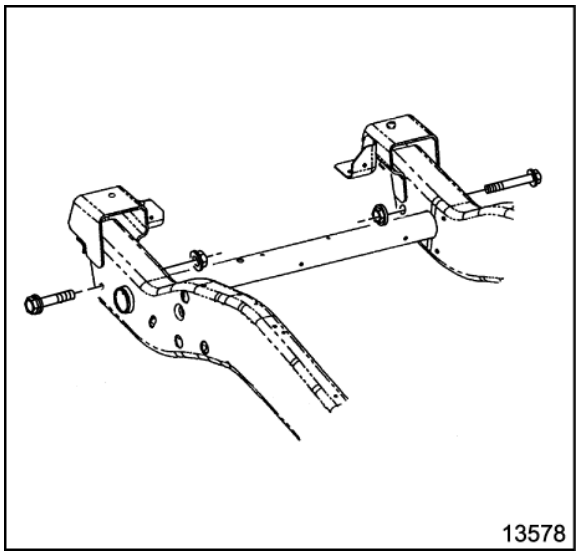


6. Remove the winch connector. Refer to Winch Connector/Harness Replacement – Front in Wiring Systems.
7. Support the bumper assembly using an approved support system.
8. Remove the 2 bolts from the upper bumper supports.

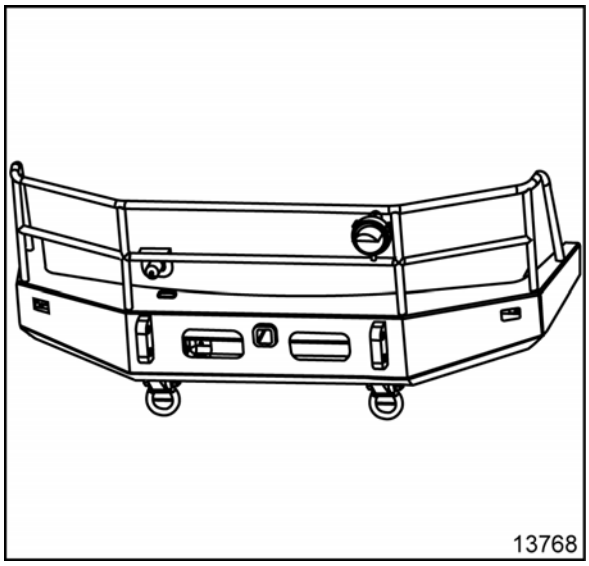


9. Remove the 4 bolts from the lower supports.

10. Remove the 2 bolts and the 2 nuts from the center bumper supports.

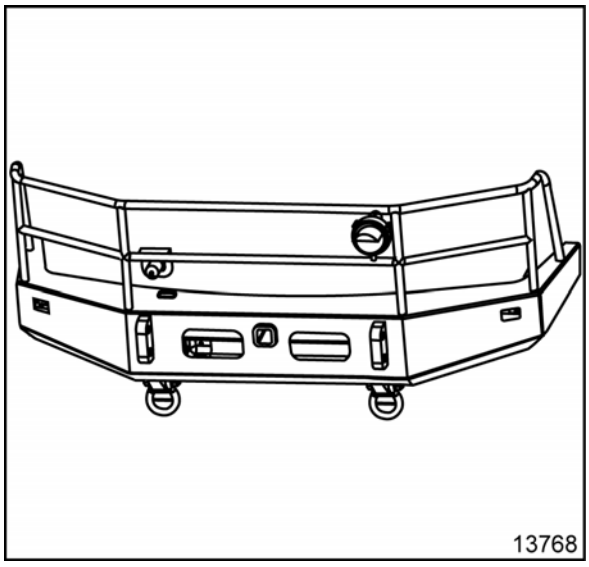


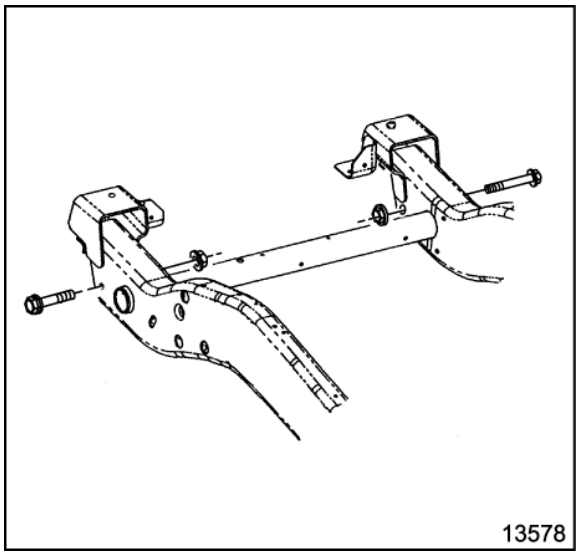
11. Using the aid of an assistant, remove the bumper assembly from the vehicle.
12. Remove the clevis/tie downs. Refer to Clevis/Tie Down Replacement – Front.



Installation Procedure

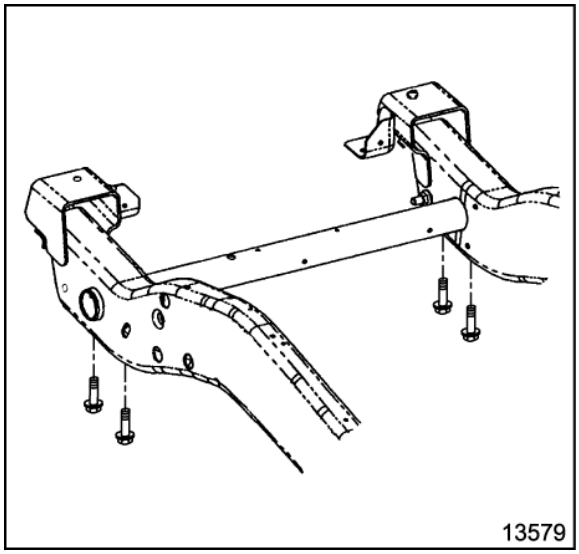
1. Install the clevis/tie downs onto the bumper. Refer to Clevis/Tie Down Replacement – Front.
2. Support the bumper assembly by using an approved support system.
3. Using the aid of an assistant, position the bumper assembly onto the vehicle.



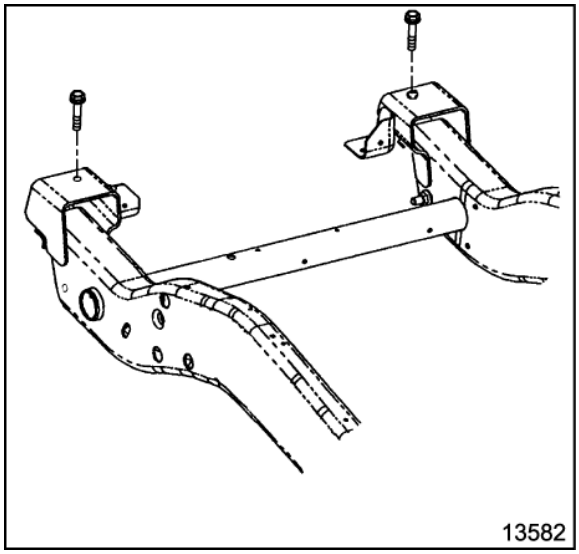


Notice: Refer to Fastener Notice in Cautions and Notices.

4. Install the 2 bolts and 2 nuts onto the center bumper supports.
   Tighten
   Tighten the center bumper support bolts to 122 N•m (90 lb ft).

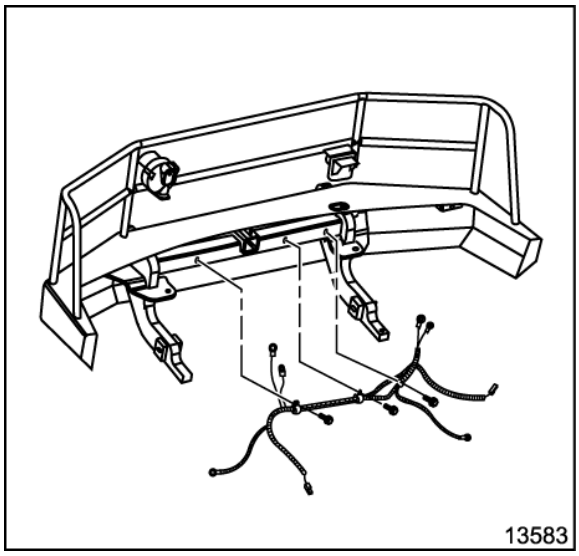


5. Install the 4 bolts onto the lower bumper supports.
   Tighten
   Tighten the lower bumper support bolts to 77 N•m (57 lb ft).



6. Install the 2 bolts onto the upper bumper supports.
   Tighten
   Tighten the upper bumper support bolts to 31 N•m (23 lb ft).

7. Install the 3 bolts and the 3 clamps onto the blackout (B/O) harness, the slave receptacle and the bumper assembly.
8. Install the blackout (B/O) marker lamps onto the bumper. Refer to Marker Lamp Replacement – Front Blackout (B/O) (Pickup) in Lighting Systems.
9. Install the slave receptacle onto the bumper. Refer to Slave Receptacle Replacement.
10. Install the blackout (B/O) headlamp onto the bumper. Refer to Headlamp Replacement – Blackout (B/O) (Pickup) in Lighting Systems.
11. Install the front winch connector. Refer to Winch Connector/Harness Replacement – Front in Wiring Systems.
12. Connect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure in Engine Electrical.

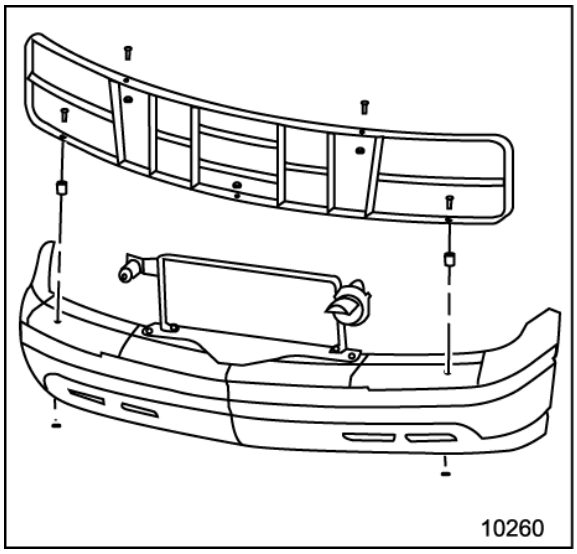


Bumper Replacement – Front (Utility)

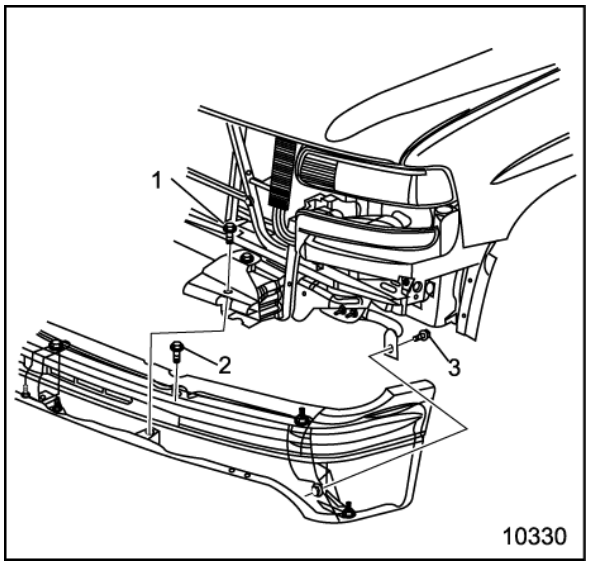
Removal Procedure

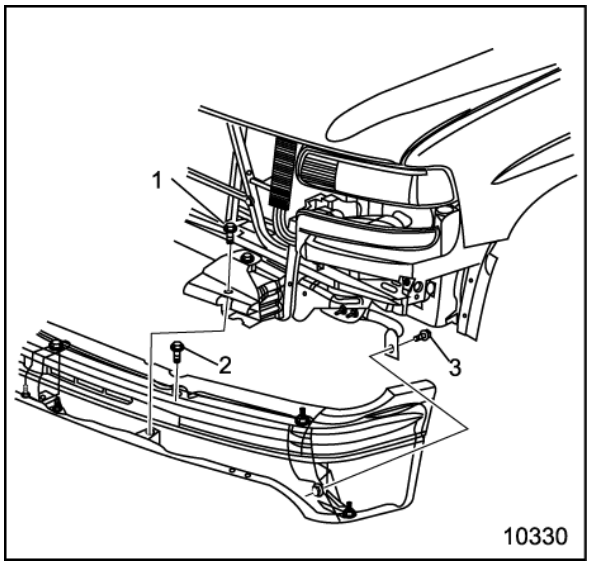
Caution: Refer to Battery Disconnect Caution in Cautions and Notices.

1. Disconnect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure in Engine Electrical.
2. Remove radiator grille brush guard. Refer to Radiator Grille Brush Guard Replacement (Utility).
3. Remove the front grille. Refer to Radiator Grille Replacement (Utility) in Exterior Trim.
4. Remove front clevis. Refer to Clevis/Tie Down Replacement – Front.
5. Remove the blackout (B/O) headlamp support from the bumper.



6. Remove the retaining bolts (1, 2) from the front bumper.
7. Remove the brace bolt (3) from the front bumper.
8. Remove the front bumper assembly from the vehicle.



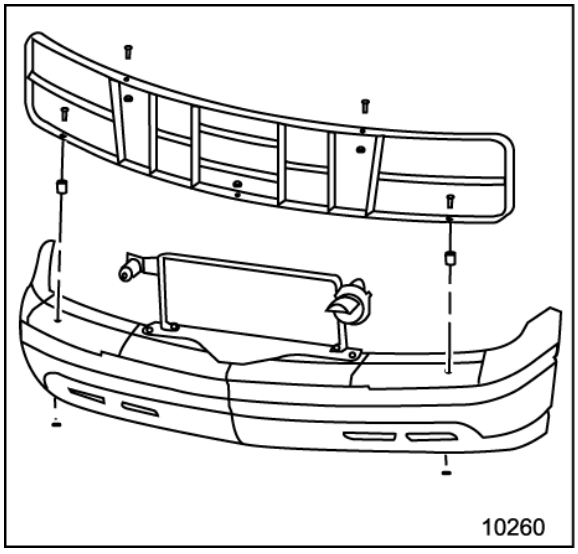


Installation Procedure

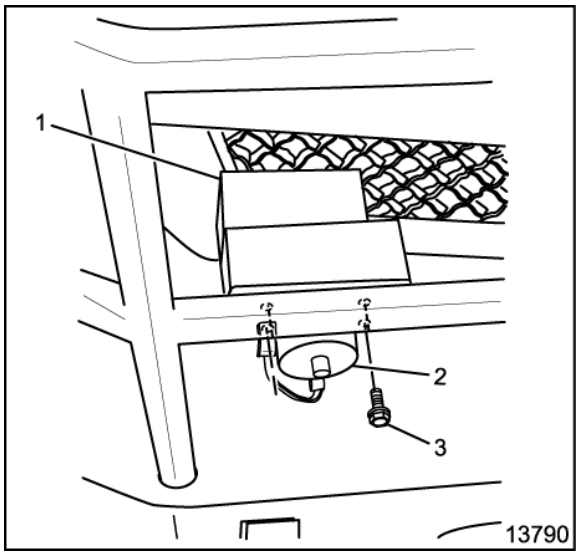
1. Position the front bumper assembly on the vehicle.

Notice: Refer to Fastener Notice in Cautions and Notices.
Important: Tighten the bolts in the following sequence.

2. Install the retaining bolts (1, 2) to the front bumper.
   Tighten
   - Tighten the bracket bolt (1) to 85 N•m (63 lb ft).
   - Tighten the bracket bolt (2) to 85 N•m (63 lb ft).
   - Tighten the brace bolt (3) to 55 N•m (41 lb ft).
3. Install the blackout (B/O) headlamp support onto the bumper.



4. Install front clevis. Refer to Clevis/Tie Down Replacement – Front.
5. Install the front radiator grille. Refer to Radiator Grille Replacement in Exterior Trim.
6. Install the radiator grille brush guard. Refer to Radiator Grille Brush Guard Replacement (Utility).
7. Connect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure in Engine Electrical.



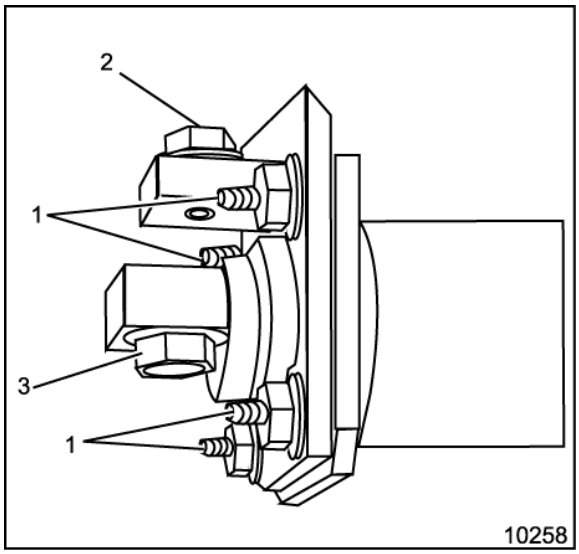
Slave Receptacle Replacement

Removal Procedure

Caution: Refer to Battery Disconnect Caution in Cautions and Notices.

1. Disconnect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure in Engine Electrical.
2. Remove the fasteners (3) securing the slave receptacle to the slave receptacle cover (2) and connect the rear connector cover (1).
3. Remove the slave receptacle cover (2).

4. Disconnect the negative cable connections (2).
5. Remove the rubber cover from the rear of the positive cable connection.
6. Disconnect the positive cable connection (3).
7. Remove the slave receptacle and the gasket from the bracket.



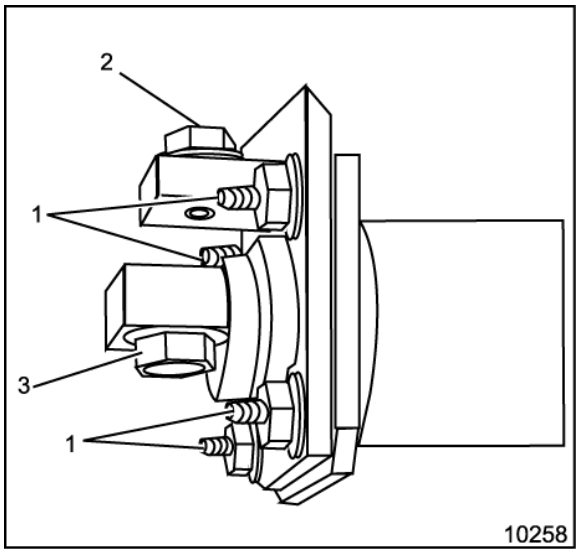
Installation Procedure

Notice: The gasket must mount to the square back of the slave start connector assembly.

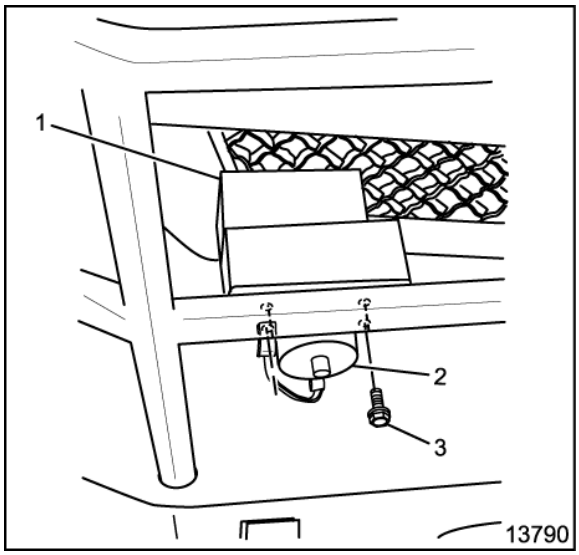
1. Position the slave receptacle with the gasket onto the bracket.

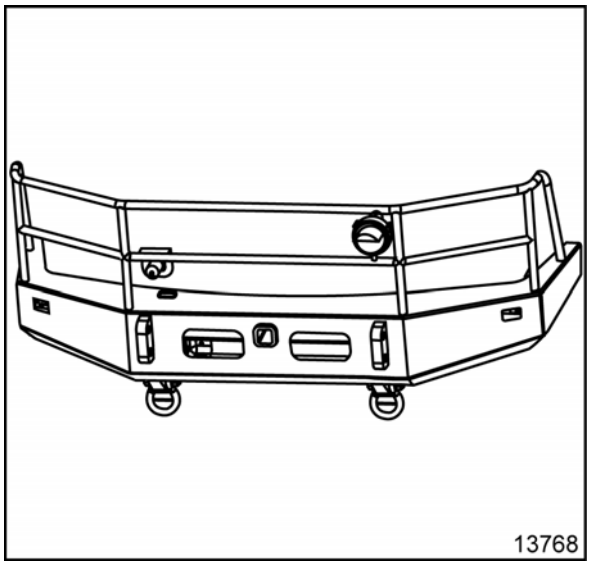
Notice: Refer to Fastener Notice in Cautions and Notices.

2. Install the positive cable onto the connection (3).
3. Install the negative cable onto the connection (2).
   Tighten
   - Tighten positive connections to 6 N•m (53 lb in).
   - Tighten negative connections to 6 N•m (53 lb in).



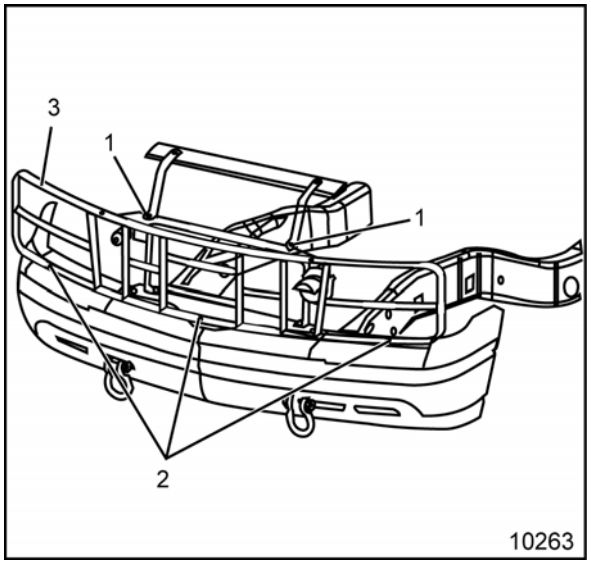
4. Install the rubber cover onto the rear of the positive cable connection.
5. Position the slave receptacle cover onto the rear of the bracket.
6. Install the fasteners (3) onto the slave receptacle (2) and the slave receptacle rear connector cover (1).
   Tighten
   Tighten bolts to 8 N•m (71 lb in).
7. Connect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure in Engine Electrical.





Radiator Grille Brush Guard Replacement

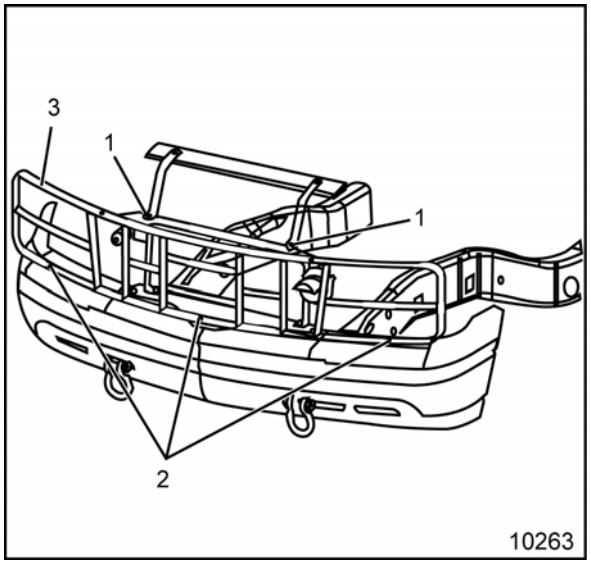
Note: The grille brush guard and front bumper are replaced as a unit. If damaged refer to Bumper Replacement – Front.



Radiator Grille Brush Guard Replacement (Utility)

Removal Procedure

1. Remove the 2 bolts (1), washers and nuts holding the brush guard to upper supports.
2. Remove the blackout (B/O) marker lamps. Refer to Marker Lamp Replacement – Front Blackout (B/O) (Utility) in Lighting Systems.
3. Remove 3 lower fasteners (2) from the bumper.
4. Remove the radiator grille brush guard assembly (3).



Installation Procedure

1. Install the radiator brush guard assembly (3).

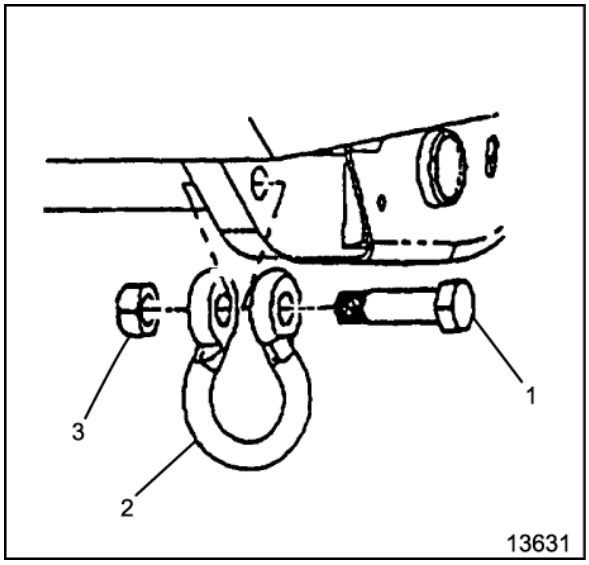
Notice: Refer to Fastener Notice in Cautions and Notices.

2. Install the brush guard to the front bumper with the 3 fasteners (2), washers, spacers and nuts.
   Tighten
   Tighten the 3 fasteners to 88 N•m (65 lb ft).
3. Install the 2 bolts (1), washers and nuts to the upper supports and tighten.
   Tighten
   Tighten the bolts to 88 N•m (65 lb ft).
4. Install the blackout (B/O) marker lamps. Refer to Marker Lamp Replacement – Front Blackout (B/O) (Utility) in Lighting Systems.

Clevis/Tie Down Replacement – Front

Removal Procedure

1. Remove the bolt (1) and nut (3).
2. Remove the clevis (2) from the mount.



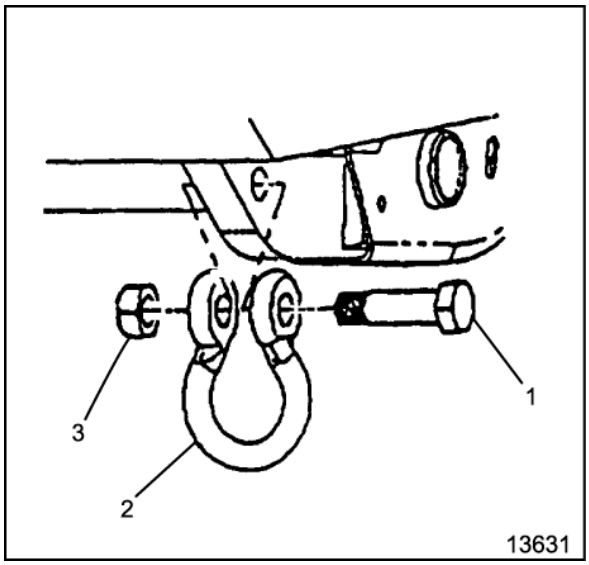
Installation Procedure

1. Install the clevis (2) to the mount.

Notice: Refer to Fastener Notice in Cautions and Notices.

Notice: Clevis must move once torqued. Do not over torque.

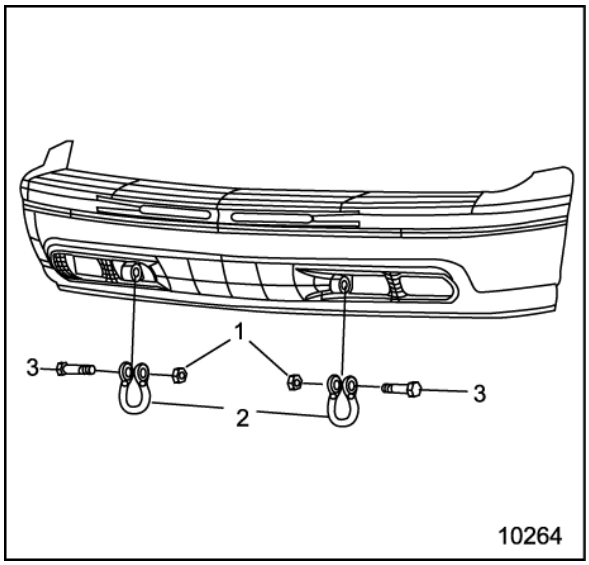
2. Install the bolt (1) and nut (3).
   Tighten
   Tighten nut and bolt to 200 N•m (148 lb ft).

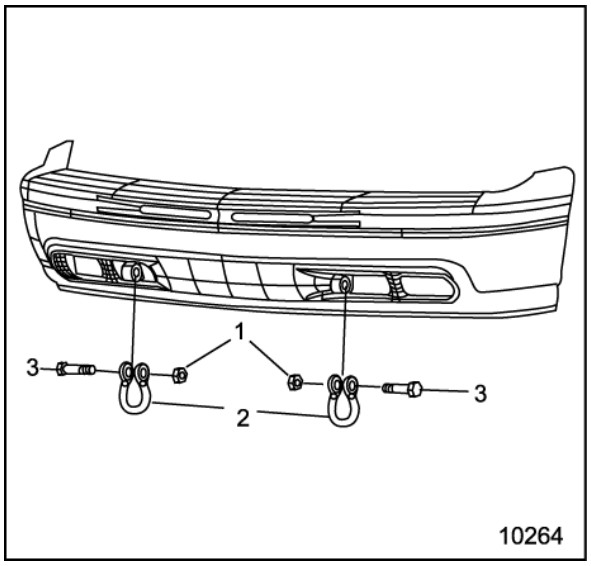


Clevis/Tie Down Replacement – Front (Utility)

Removal Procedure

1. Remove the bolt (3) and nut (1).
2. Remove the clevis (2) from the mount.





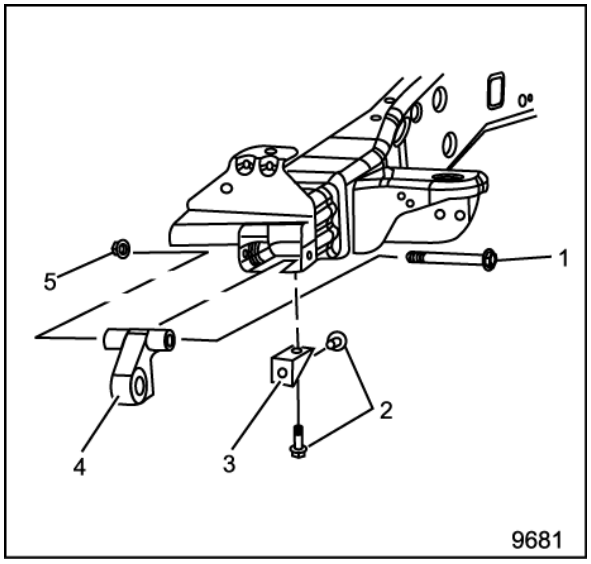
Installation Procedure

1. Install the clevis (2) to the mount.

Notice: Refer to Fastener Notice in Cautions and Notices.

Notice: Clevis must move once torqued. Do not over torque.

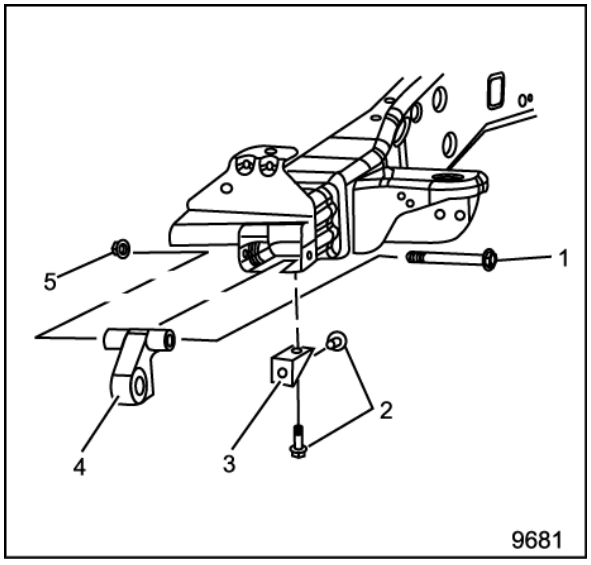
2. Install the bolt (3) and nut (1).
   Tighten
   Tighten nut and bolt to 200 N•m (148 lb ft).



Clevis/Tie Down Support Replacement – Front (Utility)

Removal Procedure

1. Remove engine shield (if equipped).
2. Remove the front clevis tie downs. Refer to Clevis/Tie Down Replacement – Front.
3. Remove the Front Bumper. Refer to Bumper Replacement – Front (Utility).
4. Remove the bracket (3) by removing the bolts (2).
5. Remove the side mounting bolt (1), washer and nut (5).
6. Remove the front clevis/tie down support (4).



Installation Procedure

Notice: Refer to Fastener Notice in Cautions and Notices.

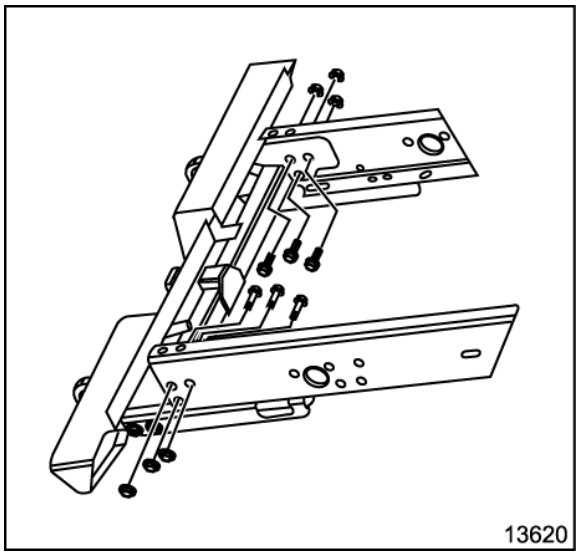
1. Install the front clevis/tie down support (4) with side mounting bolt (1), washer and nut (5).
   Tighten
   Tighten side mounting bolts to 80-95 N•m (59-70 lb ft).
2. Install the bracket (3) with bolts (2) and tighten.
   Tighten
   Tighten bracket bolts to 80-95 N•m (59-70 lb ft).
3. Install the front bumper. Refer to Bumper Replacement – Front (Utility).
4. Install the front clevis tie downs. Refer to Clevis/Tie Down Replacement – Front.
5. Install the engine shield (if equipped).

Bumper Replacement – Rear (Pickup)

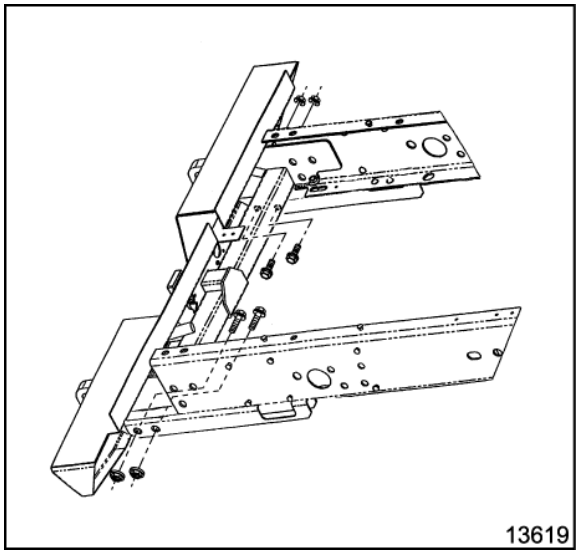
Removal Procedure

Caution: Refer to Battery Disconnect Caution in Cautions and Notices.

1. Remove the negative battery cable of the right battery and the 12V and 24V cables of the left battery.
2. Remove the pintle hook. Refer to Pintle Hook Replacement.
3. Disconnect the trailer wiring harness. Refer to Blackout (B/O) and Trailer Harness Replacement – Rear in Wiring Systems.
4. Remove the winch connector. Refer to Winch Connector/Harness Replacement – Rear in Wiring Systems.
5. Support the rear bumper using an approved support system.
6. Remove the 6 side frame rail to bracket bolts.

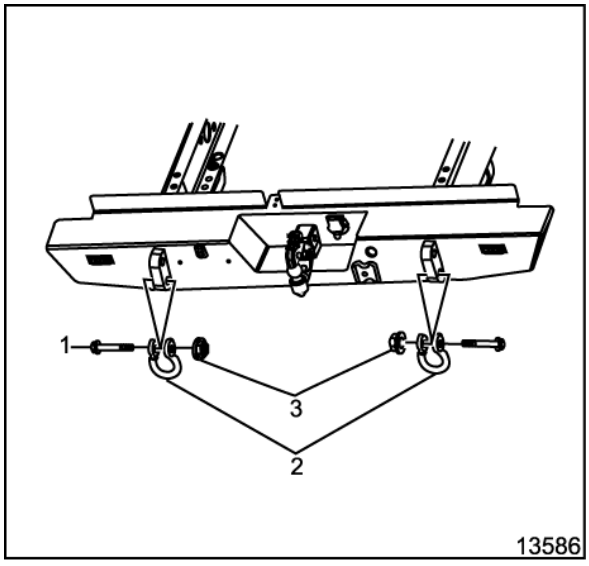


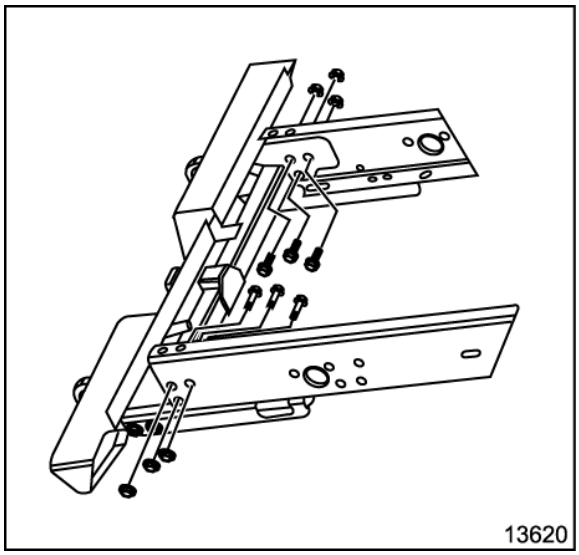
7. Remove the 4 bumper reinforcement bolts.
8. Using the aid of an assistant, remove the rear bumper from the vehicle.
9. Remove the trailer wiring harness from the rear bumper. Refer to Blackout (B/O) and Trailer Harness Replacement – Rear in Wiring Systems.
10. Remove the blackout (B/O) marker lamps. Refer to Marker Lamp Replacement – Rear in Lighting Systems.
11. Remove the military trailer connector. Refer to Military Trailer Connector Replacement in Wiring Systems.
12. Remove the commercial trailer connector. Refer to Commercial Trailer Connector Replacement in Wiring Systems.
13. Remove the clevis/tie down. Refer to Clevis/Tie Down Replacement – Rear Military Bumper.



Installation Procedure

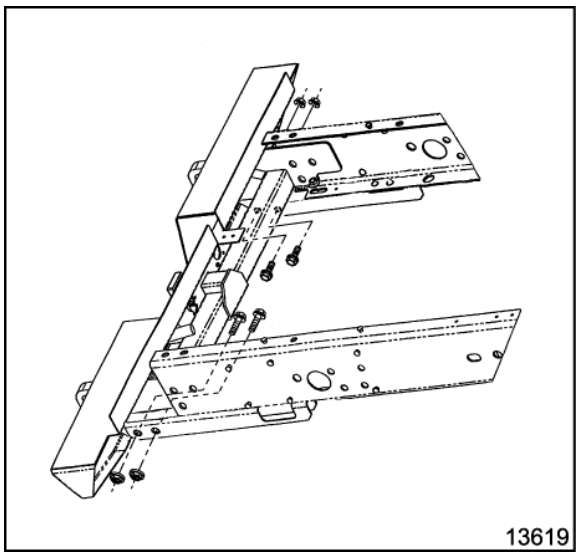
1. Install the clevis/tie down (2). Refer to Clevis/Tie Down Replacement – Rear Military Bumper.
2. Install the blackout (B/O) marker lamps. Refer to Marker Lamp Replacement – Rear in Lighting Systems.
3. Install the military trailer connector. Refer to Military Trailer Connector Replacement in Wiring Systems.
4. Install the commercial trailer connector. Refer to Commercial Trailer Connector Replacement in Wiring Systems.
5. Install the trailer wiring harness. Refer to Blackout (B/O) and Trailer Harness Replacement – Rear in Wiring Systems.
6. Support the rear bumper using an approved support system.
7. Using the aid of an assistant, position the rear bumper onto the vehicle.





8. Install the 6 side frame rail to bracket bolts/nuts.

Note: Do not tighten at this time.



Notice: Refer to Fastener Notice in Cautions and Notices.

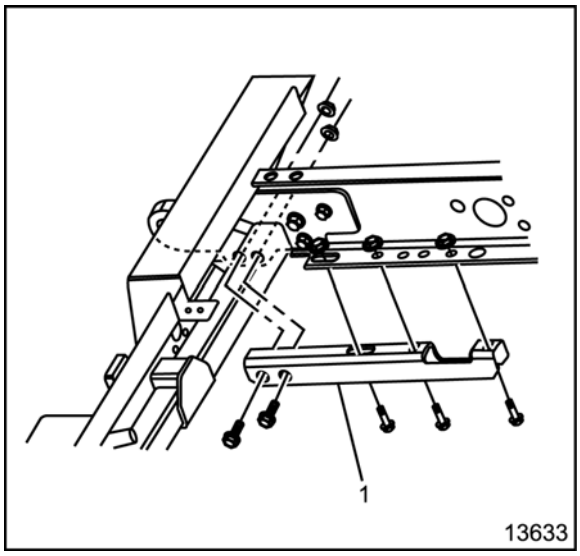
9. Install the 4 bumper reinforcement bolts.

Important: Tighten the rear bumper mounting bolts in the following sequence.

Tighten

- Tighten the 6 side frame rail bracket bolts/nuts to 117 N•m (87 lb ft).
- Tighten the 4 side bumper reinforcement bracket bolts/nuts to 79 N•m (59 lb ft).

10. Connect the trailer wiring harness. Refer to Blackout (B/O) and Trailer Harness Replacement – Rear in Wiring System.
11. Install the winch connector. Refer to Winch Connector/Harness Replacement – Rear in Wiring Systems.
12. Remove the support.
13. Connect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure in Engine Electrical.
14. Install the pintle hook. Refer to Pintle Hook Replacement.

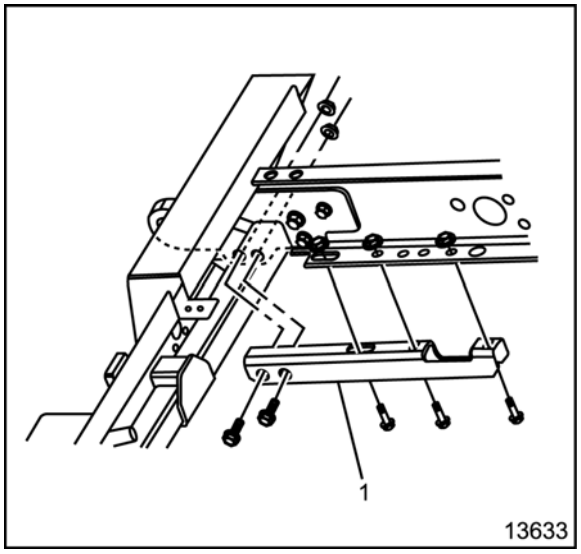


Bumper Reinforcement – Rear

Removal Procedure

1. Remove the 2 rear bumper reinforcement to bracket nuts/bolts.
2. Remove the 3 rear bumper reinforcement to frame nuts/bolts.
3. Remove the rear bumper reinforcement bracket (1).

Installation Procedure



1. Position the rear bumper reinforcement bracket (1) onto the vehicle.
2. Install the 2 bumper reinforcement to bracket nuts/bolts.

Note: Do not tighten at this time.

3. Install the 3 bumper reinforcement to frame nuts/bolts.

Notice: Refer to Fastener Notice in Cautions and Notices.

Important: Tighten the rear bumper reinforcement in the following sequence.

Tighten

- Tighten the 3 bumper reinforcement to frame nuts/bolts to 117 N•m (87 lb ft).
- Tighten the 2 side bumper reinforcement bracket bolts/nuts to 79 N•m (59 lb ft).

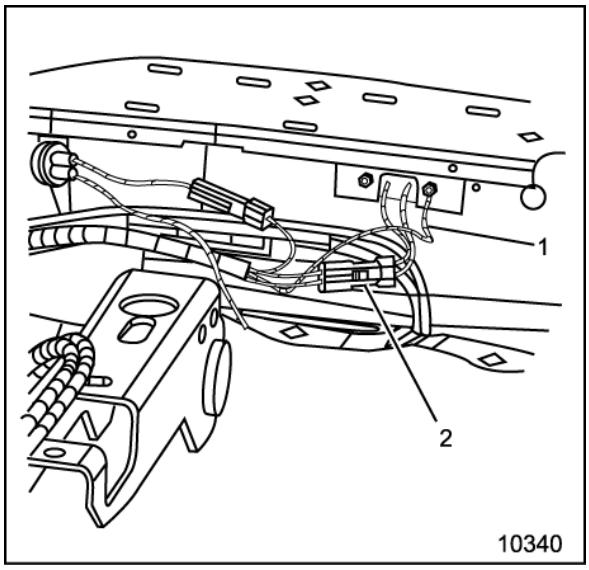
Note: Repeat for opposite side reinforcement.

Bumper Replacement – Rear (Utility)

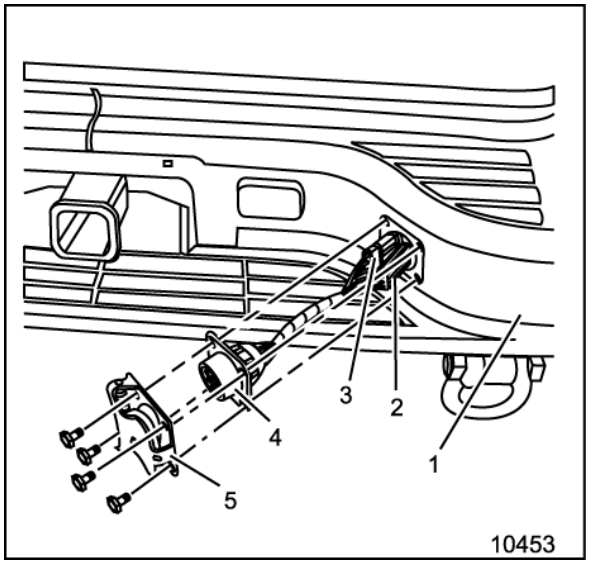
Removal Procedure

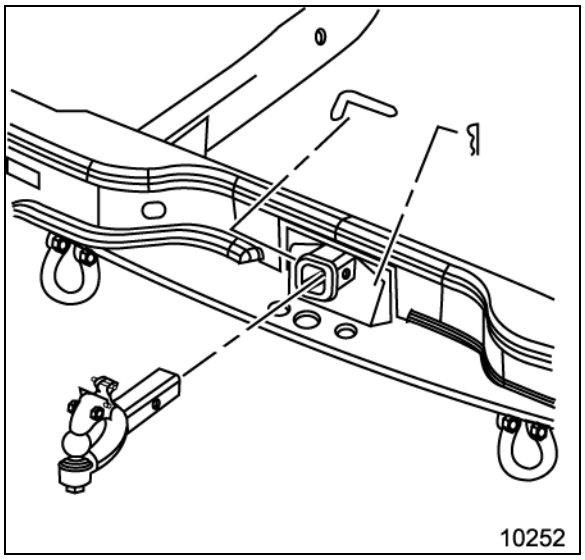
Caution: Refer to Battery Disconnect Caution in Cautions and Notices.

1. Disconnect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure in Engine Electrical.
2. Disconnect the blackout (B/O) marker lamps connector (2) by depressing the tab releases, and remove the ground leads (1) from mounting stud.

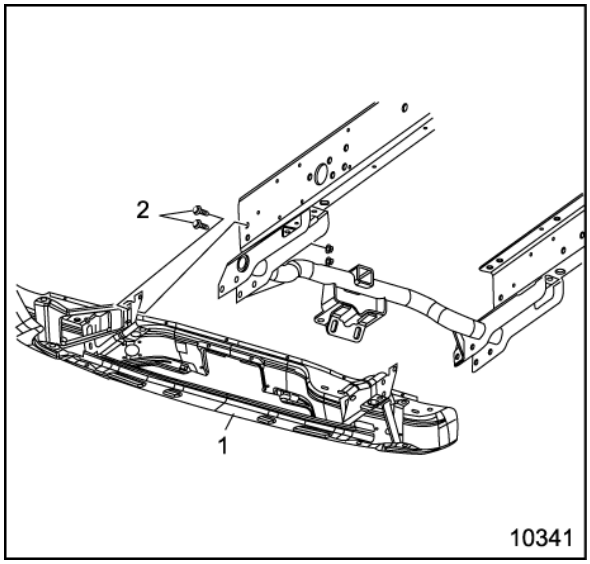


3. Disconnect the trailer lamp connectors (2, 3) by depressing the tab releases.

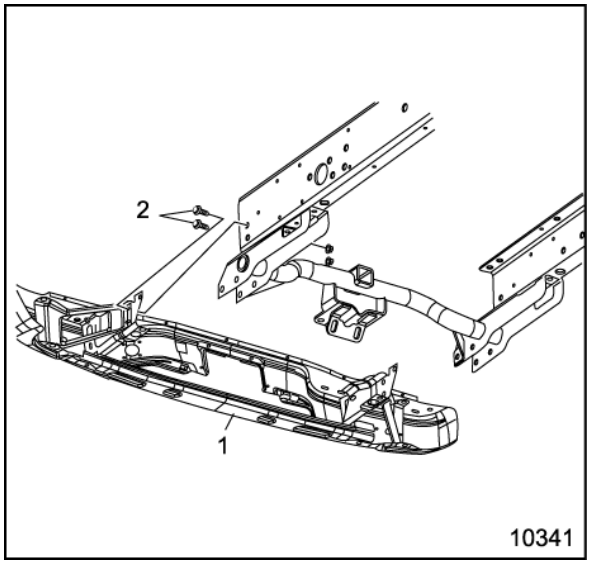




4. Remove pintle hook from the receiver.



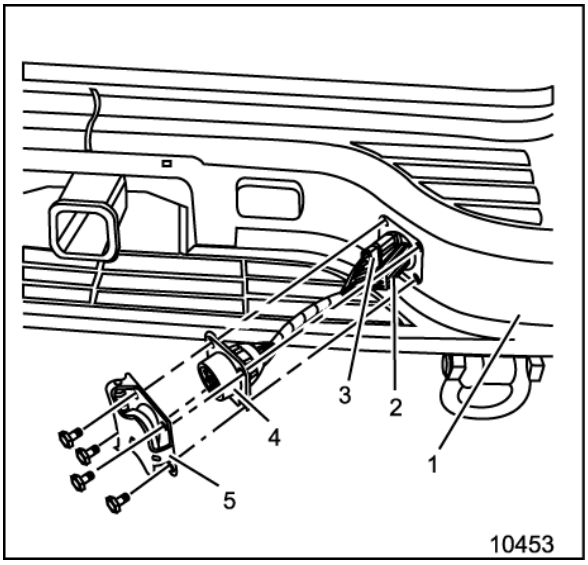
5. Remove the lower step pad.
6. Remove lower bolts attaching bumper to receiver.
7. Remove the bolts and nuts holding the rear bumper to the brace(s), at the lower attaching points.
8. Remove the bolts and nuts holding the rear bumper to the brace(s), at the upper attaching points.
9. Remove the bolts, washers and nuts holding the rear bumper to the frame rail.
10. Remove the rear bumper (1).



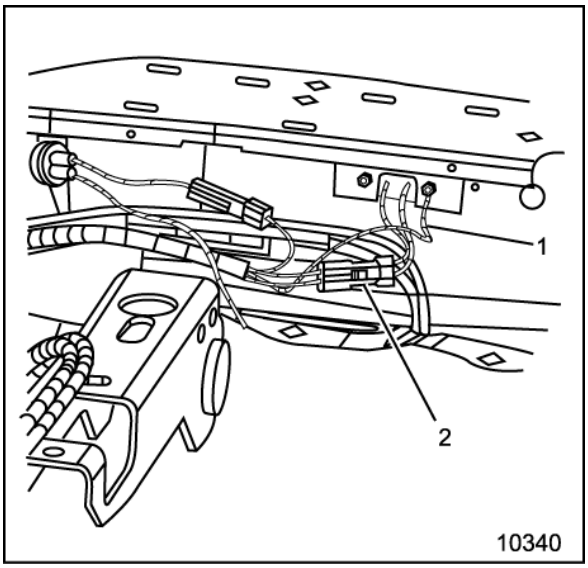
Installation Procedure

1. Install the rear bumper (1) loosely to the frame rail with the bolts and the washers and nuts.
2. Install the rear bumper loosely to the brace(s), at the upper attaching points with the bolts and nuts.
3. Install the rear bumper loosely to the brace(s), at the lower attaching points with the bolts and nuts.

4. Connect the trailer lamp connectors (2, 3).

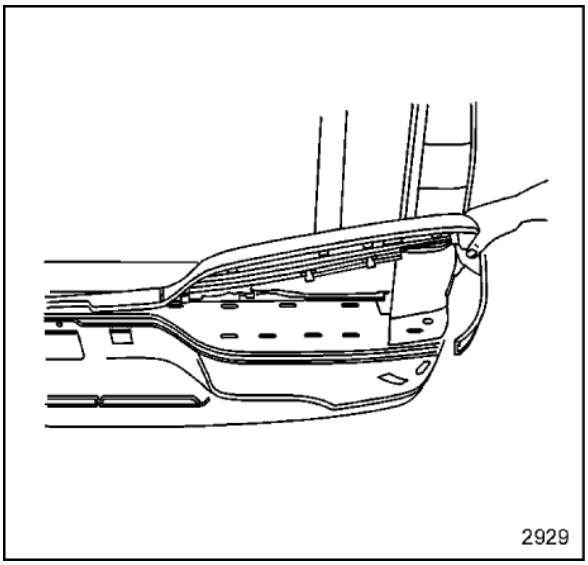


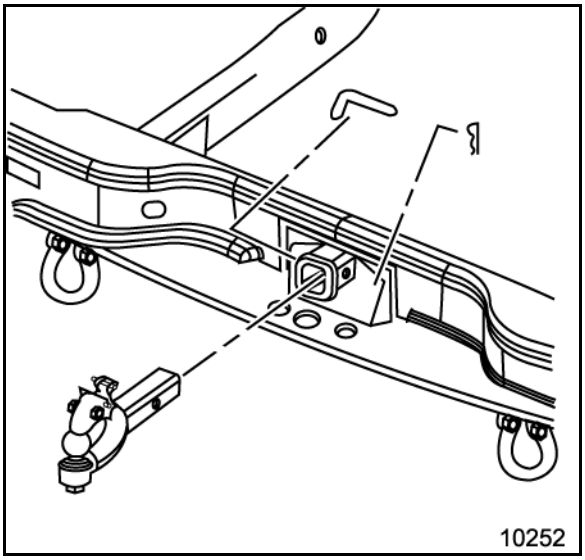
5. Connect the blackout (B/O) marker lamp connector (2), and the ground lead to (1) to the mounting bracket.



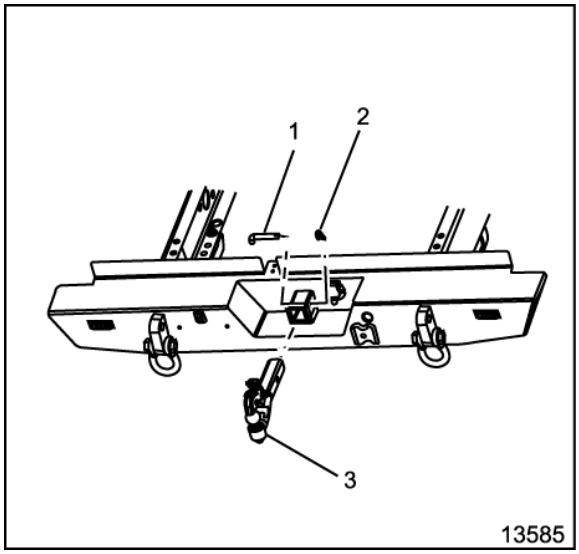
Notice: Refer to Fastener Notice in Cautions and Notices.

6. Finish installing all attaching hardware.
   Install the bolts.
   Tighten
   - Tighten the frame bolts to 90 N•m (66 lb ft).
   - Tighten the brace bolts to 90 N•m (66 lb ft).
7. Connect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure in Engine Electrical.
8. Install the lower step pad.





9. Install the pintle hook into the receiver.

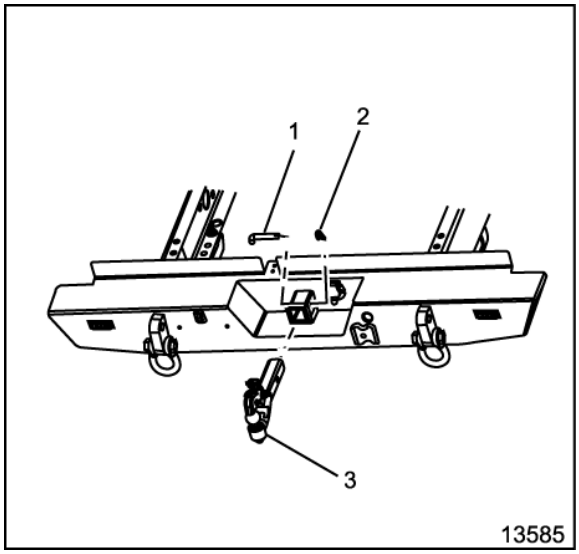


Pintle Hook Replacement

Removal Procedure

Note: Pickup shown all others similar.

1. Remove the spring clip (2) from the retaining pin.
2. Remove the retaining pin (1) from the receiver.
3. Pull the pintle hook (3) out of the receiver.



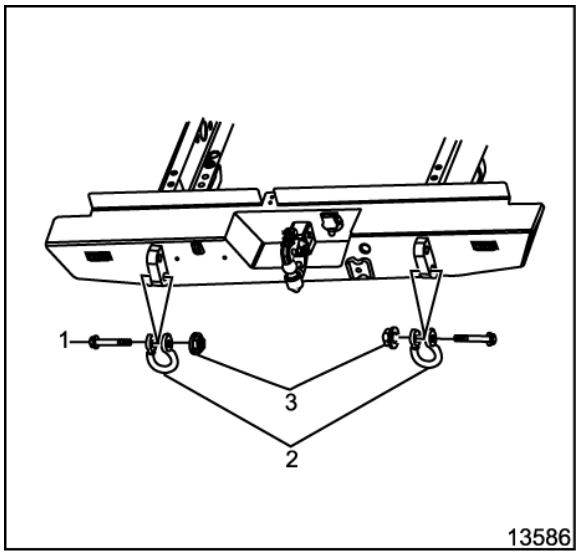
Installation Procedure

1. Clean any debris out of the receiver.
2. Push pintle hook (3) into receiver until holes line up.
3. Install retaining pin (1) into hole.
4. Install spring clip (2) into retaining pin.

Clevis/Tie Down Replacement – Rear Military Bumper

Removal Procedure

1. Remove the nut (3) and bolt (1).
2. Remove the clevis (2) from frame.



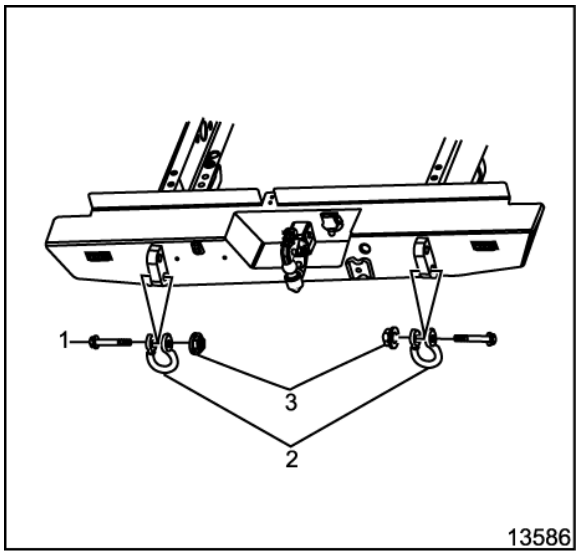
Installation Procedure

1. Install the clevis (2) to frame.

Notice: Refer to Fastener Notice in Cautions and Notices.

Notice: Clevis must move once torqued. Do not over torque.

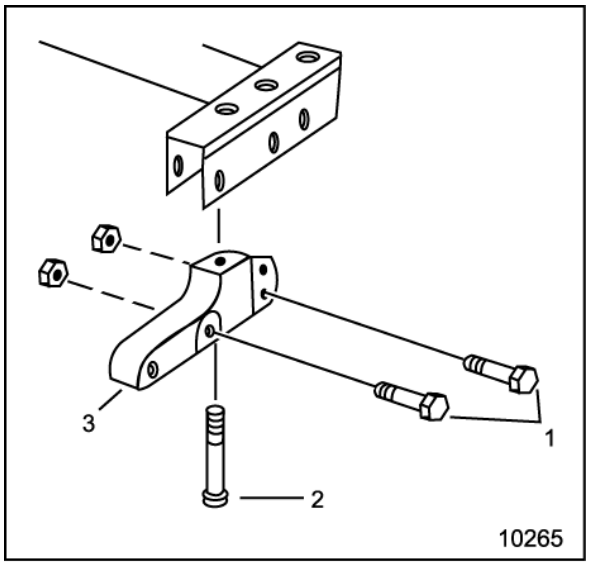
2. Install the bolt (1) and nut (3).
   Tighten
   Tighten the nut and bolt to 200 N•m (148 lb ft).

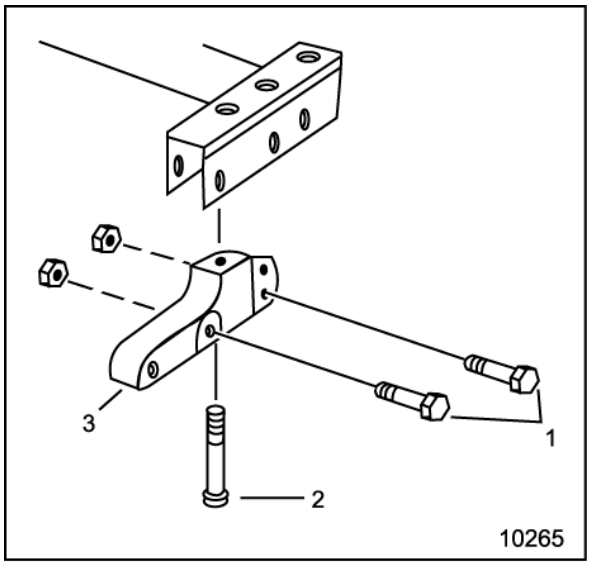


Clevis/Tie Down Bracket Replacement – Rear (Utility)

Removal Procedure

1. Remove the rear clevis. Refer to Clevis/Tie Down Replacement – Rear (Utility).
2. Remove bolt (2) from clevis mount.
3. Remove nuts and bolts (1) from clevis mount.
4. Remove clevis mount (3) from frame.



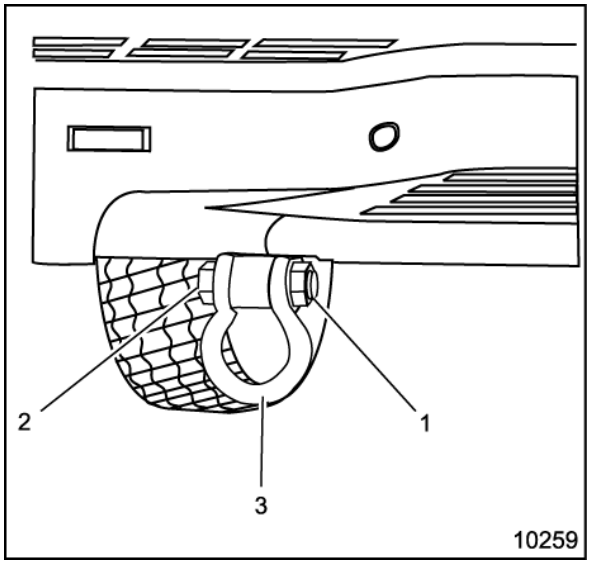


Installation Procedure

1. Install clevis mount(s) to frame.

Notice: Refer to Fastener Notice in Cautions and Notices.

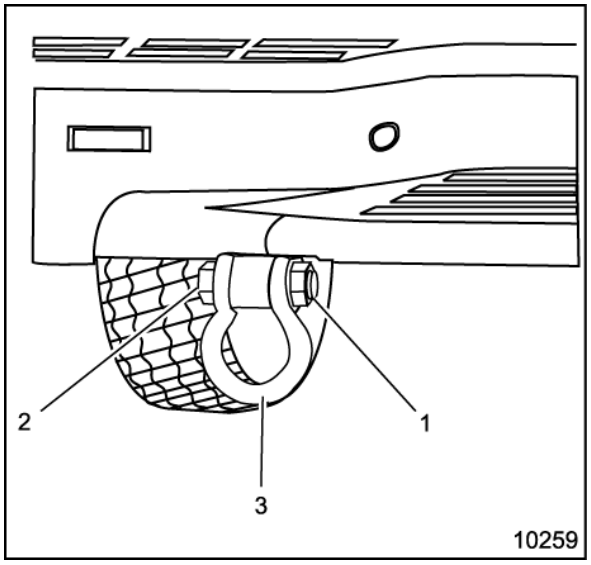
2. Install bolts (1) and tighten.
   Tighten
   Tighten bolts to 77 N•m (57 lb ft).
3. Install bolt (2) and tighten.
   Tighten
   Tighten bolt to 102 N•m (75 lb ft).
4. Install the rear clevis. Refer to Clevis/Tie Down Replacement – Rear (Utility).



Clevis/Tie Down Replacement – Rear (Utility)

Removal Procedure

1. Remove the nut (1) and bolt (2).
2. Remove the clevis (3) from frame.



Installation Procedure

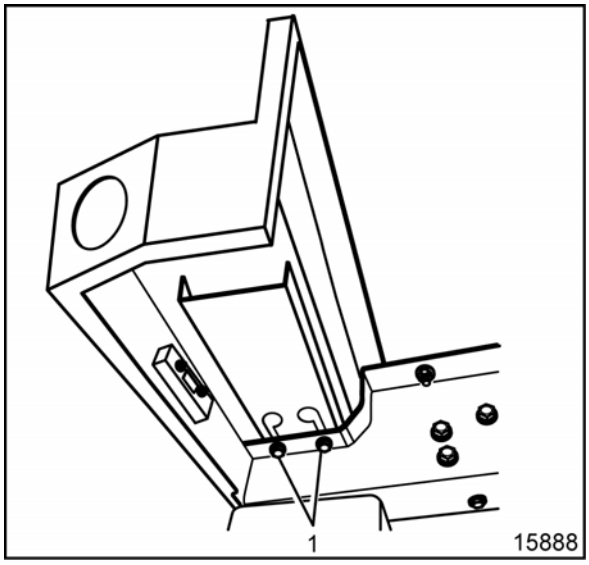
1. Install the clevis (3) to frame.

Notice: Refer to Fastener Notice in Cautions and Notices.

Notice: Clevis must move once torqued. Do not over torque.

2. Install the bolt (2) and nut (1) and tighten.
   Tighten
   Tighten the nut and bolt to 200 N•m (148 lb ft).

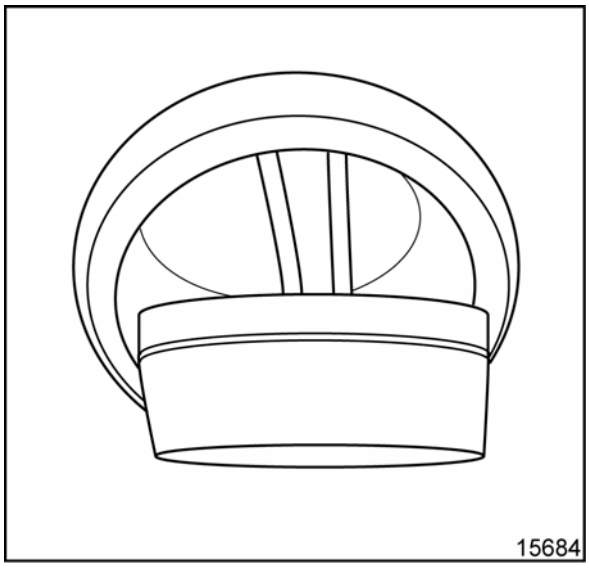
Bumper Replacement – Rear (Maintenance Body)



Removal Procedure

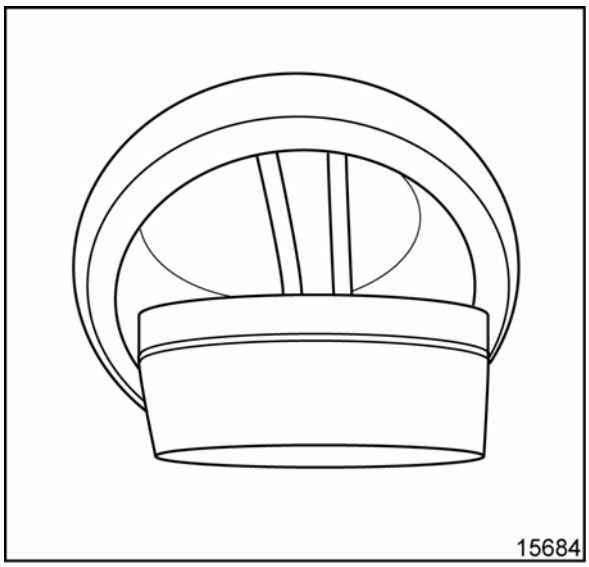
Caution: Refer to Battery Disconnect Caution in Caution and Notices.

1. Disconnect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure in Engine Electrical.
2. Remove the clevis/tie down.
3. Disconnect the trailer wiring harness. Refer to Blackout (B/O) and Trailer Harness Replacement – Rear in Wiring Systems.
4. Remove the winch connector (if equipped). Refer to Winch Connector/Harness Replacement – Rear in Wiring Systems.
5. Remove the 4 bumper bolts (1), right side shown left side similar.

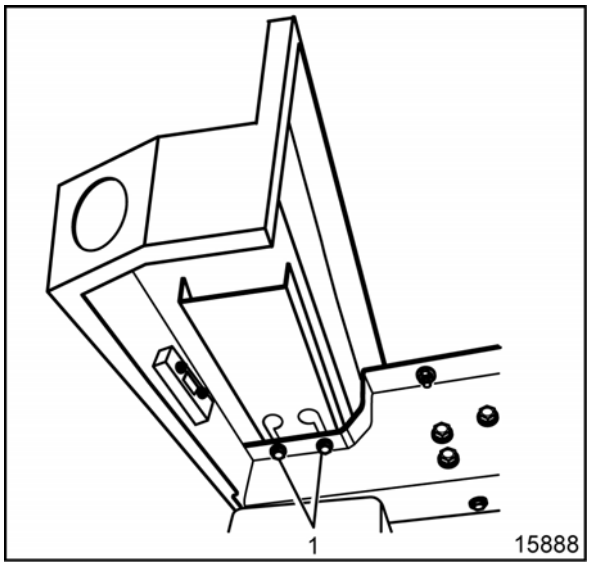


6. Using the aid of an assistant, remove the rear bumper from the vehicle by sliding it off the brackets.
7. Remove the trailer wiring harness from the rear bumper. Refer to Blackout (B/O) and Trailer Harness Replacement – Rear in Wiring Systems.
8. Remove the marker lamps. Refer to Marker Lamp Replacement (Maintenance Body) in Lighting Systems.
9. Remove the taillamps. Refer to Taillamp Replacement (Maintenance Body) in Lighting Systems.
10. Remove the blackout (B/O) marker lamps. Refer to Marker Lamp Replacement – Rear (Maintenance Body) in Lighting Systems.
11. Remove the military trailer connector. Refer to Military Trailer Connector Replacement in Lighting Systems.
12. Remove the commercial trailer connector. Refer to Commercial Trailer Connector Replacement in Wiring Systems.

Installation Procedure



1. Install the marker lamps. Refer to Marker Lamp Replacement (Maintenance Body).
2. Install the taillamps. Refer to Taillamp Replacement (Maintenance Body).
3. Install the blackout (B/O) marker lamps. Refer to Marker Lamp Replacement – Rear (Maintenance Body) in Lighting Systems.
4. Install the military trailer connector. Refer to Military Trailer Connector Replacement in Lighting Systems.
5. Install the commercial trailer connector. Refer to Commercial Trailer Connector Replacement in Wiring Systems.
6. Install the trailer wiring harness. Refer to Blackout (B/O) and Trailer Harness Replacement – Rear in Wiring Systems.
7. Using the aid of an assistant, position the rear bumper onto the vehicle by sliding it on to the tie down plates.



Notice: Refer to Fastener Notice in Cautions and Notices.

8. Install the 4 bumper bolts (1), right side shown left side similar.
   Tighten
   Tighten the bumper bolts to 79 N•m (59 lb ft).
9. Connect the trailer wiring harness. Refer to Blackout (B/O) and Trailer Harness Replacement – Rear in Wiring System.
10. Install the winch connector. Refer to Winch Connector/Harness Replacement – Rear in Wiring Systems.
11. Connect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure in Engine Electrical.
12. Install the clevis/tie down.

Tie Down Plate Replacement – Rear (Maintenance Body)

Removal Procedure

1. Remove the rear hitch and reinforcement plate. Refer to Trailer Hitch/Reinforcement Plate Replacement (Maintenance Body) in Frame and Underbody.
2. Remove the rear bumper. Refer to Bumper Replacement – Rear (Maintenance Body).
3. Remove the rear bumper reinforcement.
4. Remove the 4 upper and 2 lower tie down plate bolts.
5. Remove the 6 remaining bolts and the tie down plate.

Installation Procedure

1. Position the tie down plate to the frame rail.
2. Install the 6 side frame rail to bracket bolts.

Note: Do not tighten at this time.

3. Install the 4 upper and 2 lower tie down plate bolts.
4. Install the rear bumper reinforcement bar. Refer to Rear Bumper Reinforcement Bar Replacement.

Notice: Refer to Fastener Notice in Cautions and Notices.

Important: Tighten the mounting bolts in the following sequence.

Tighten

- Tighten the 6 side frame rail bracket bolts to 117 N•m (87 lb ft).
- Tighten the 4 upper and 2 lower tie down plate bolts to 79 N•m (59 lb ft).

5. Install the rear bumper. Refer to Bumper Replacement – Rear (Maintenance Body).
6. Install the rear hitch and reinforcement plate. Refer to Trailer Hitch/Reinforcement Plate Replacement (Maintenance Body) in Frame and Underbody.

Reinforcement Bar Replacement (Maintenance Body)

Removal Procedure

1. Remove the rear bumper. Refer to Bumper Replacement – Rear (Maintenance Body).
2. Remove the reinforcement bar bolts and reinforcement bar.

Installation Procedure

Notice: Refer to Fastener Notice in Cautions and Notices.

1. Install the reinforcement bar and mounting bolts.
   Tighten
   Tighten the reinforcement bar mounting bolts to 68 N•m (50 lb ft).
2. Install the rear bumper. Refer to Bumper Replacement – Rear (Maintenance Body).

Description and Operation

Bumpers

The equipment described includes all bumper assemblies, front and rear, that are offered for the military vehicles. The bumper components provided in this military package are rugged and durable and are designed for the rigors of limited off-road conditions. Repairs on these items include the clevis tie down and pintle hooks. The repair of some sub-assemblies requires removal of the rear bumpers for access while others require removal of electrical components and lamp harness connections.

Winch Receiver

The front and rear bumpers of some of the military vehicles are equipped with receivers. For mounting of a portable winch, the winch prep includes electrical connections for the winch.

Seats

Specifications

Fastener Tightening Specifications

Application	Specification	
	Metric	English
Seat Bolts	88 N•m	65 lb ft

BLANK

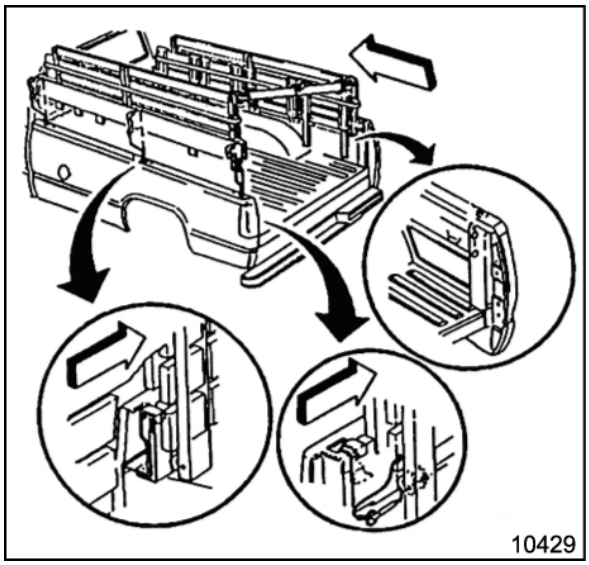
Repair Instructions

Seat Replacement – Troop

Removal Procedure

Notice: Note the clamp and stud arrangement for installation later.

1. Remove the 2 bolts, nuts and clamps holding the seat assembly to the box rail.
2. Fold the seat section to the seatback and install the tether pins to the locking holes for easy removal.
3. Remove the 2 bolts and nylock nuts from the end of the rail.
4. Remove the troop seat assembly.



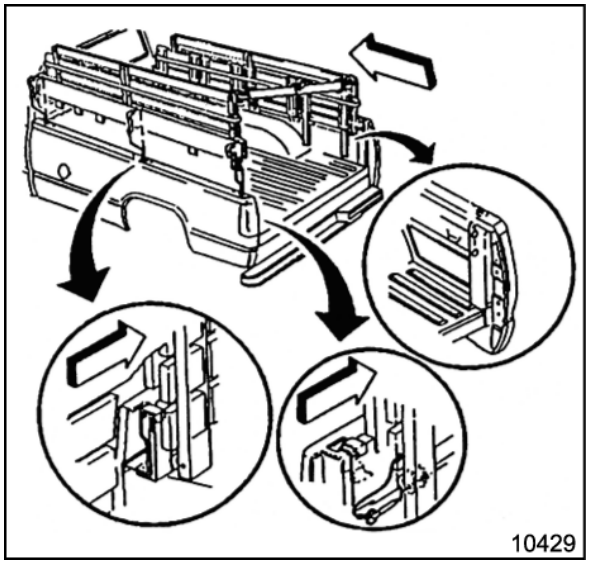
Installation Procedure

Notice: The left and right seat assemblies are not interchangeable. Match the mounting hole pattern of the seat assembly before attempting to install.

1. Unfold the third seat back (from the cab) down.

Notice: Refer to Fastener Notice in Cautions and Notices.

2. When properly aligned, install the 2 bolts, screws and nuts to the end of the rail.
   Tighten
   Tighten the bolts to 88 N•m (65 lb ft).
3. Install the 2 clamps, bolts and nuts holding the seat assembly to the holes within the openings at the middle and forward end of the box rail.
   Tighten
   Tighten the bolts to 88 N•m (65 lb ft).



Description and Operation

Folding Rear Seat

The troop seats provide 2 benches with seating for up to 4 troops on each side. Each bench is anchored by 3 sets of fasteners to each box rail. The seats can be folded up using tether pins to afford more cargo space. They are equipped with a safety strap, which should be hooked across the rear end of the box when occupied. Refer to the 2004 LSSV Owner's Manual Supplement for further details.

Seat Covers

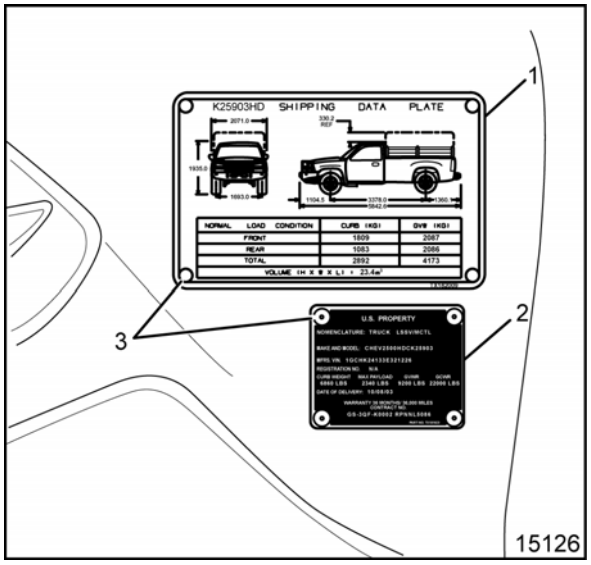
Seat covers are installed on the interior seats to protect the vehicle's interior and are green or tan in color. They allow full function of the seat controls and seat belts.

Interior Trim

Specifications

Fastener Tightening Specifications

Application	Specification	
	Metric	English
Floor Mount Gun Rack Bolts	8 N•m	70 lb in
Floor Mount Gun Rack Bolts Front (Utility)	55 N•m	41 lb ft
Lower Gun Rack Bolts	8 N•m	70 lb in
Upper Gun Rack Bolts	8 N•m	70 lb in

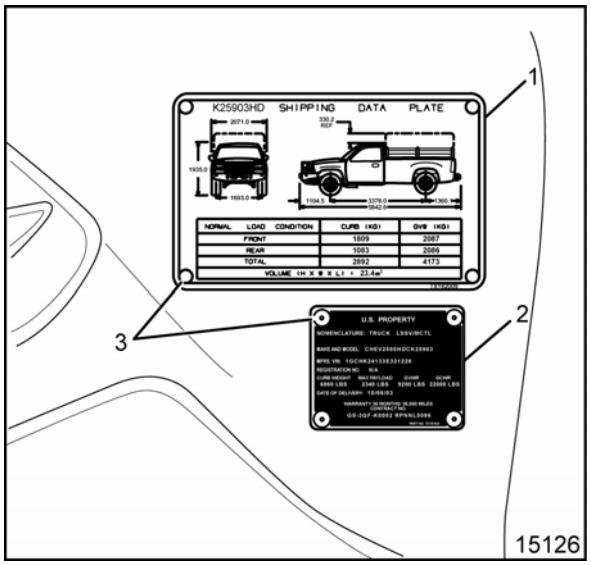


Repair Instructions

Government Vehicle Data Plate Replacement

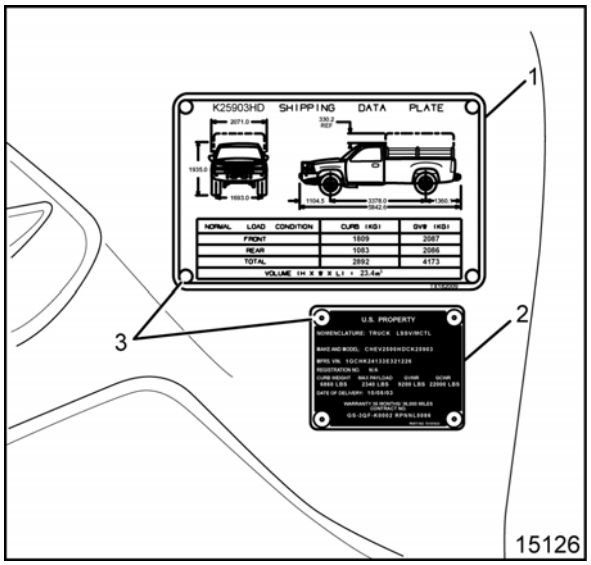
Removal Procedure

1. Drill out the 4 rivets (3).
2. Remove the data plate (2).



Installation Procedure

1. Install the plate (2) to the original holes.
2. Install the new rivets (3).



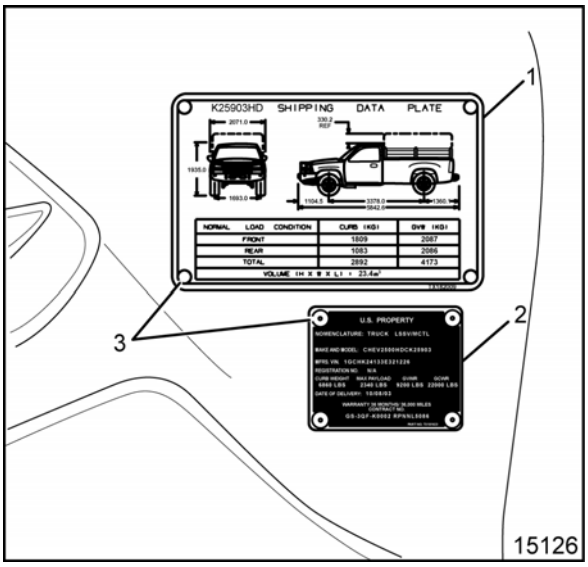
Shipping Data Plate Replacement

Removal Procedure

1. Drill out the 4 rivets (3).
2. Remove the data plate (1).

Installation Procedure

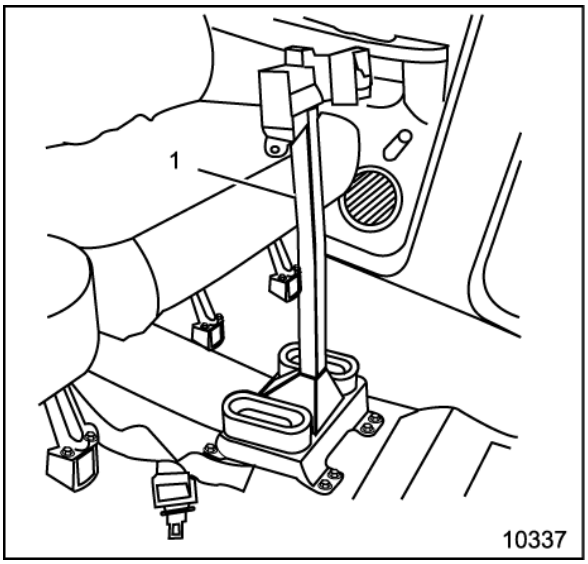
1. Install the data plate (1) to the original holes.
2. Install the new rivets (3).



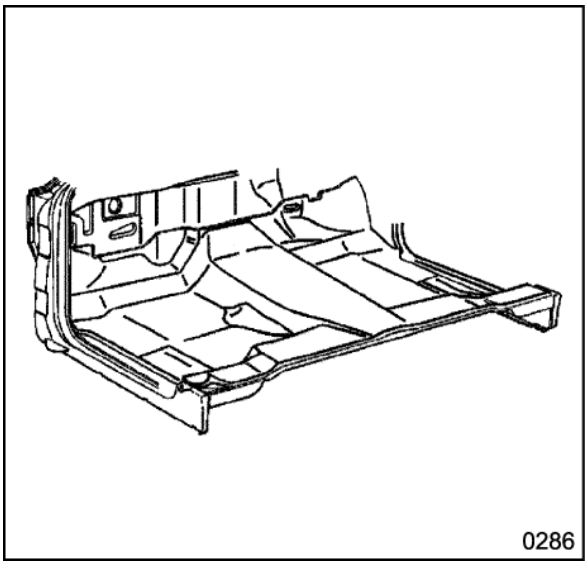
Floor Mat Replacement

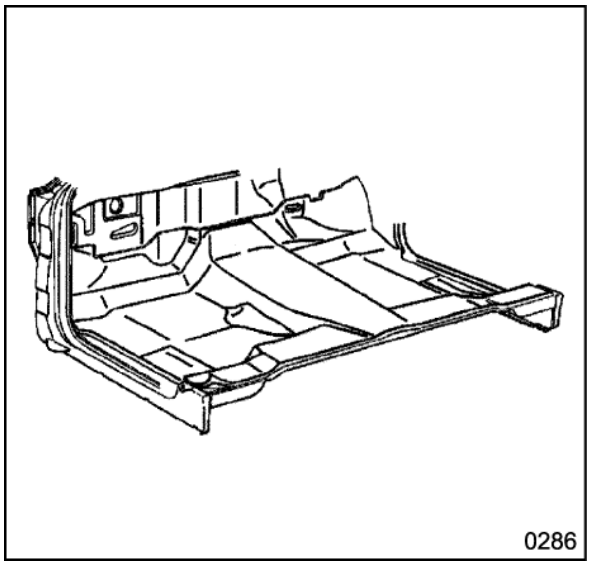
Removal Procedure

1. Remove bolts securing gun rack (1) and remove mount. Refer to Gun Rack Replacement – Lower or Gun Rack Replacement – Floor Mount (Crew Cab) or Gun Rack Replacement – Floor Mount (Utility).



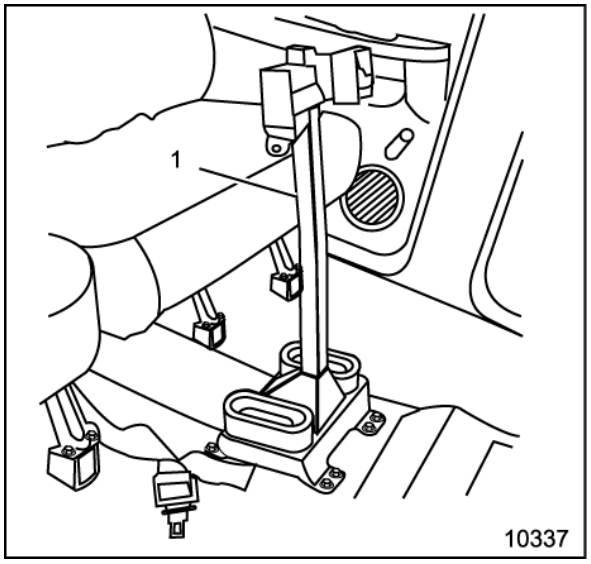
2. Remove floor mat. Refer to Carpet Replacement – Front W/O HP2 in Interior Trim in the 2004 C/K Truck Service Manual.



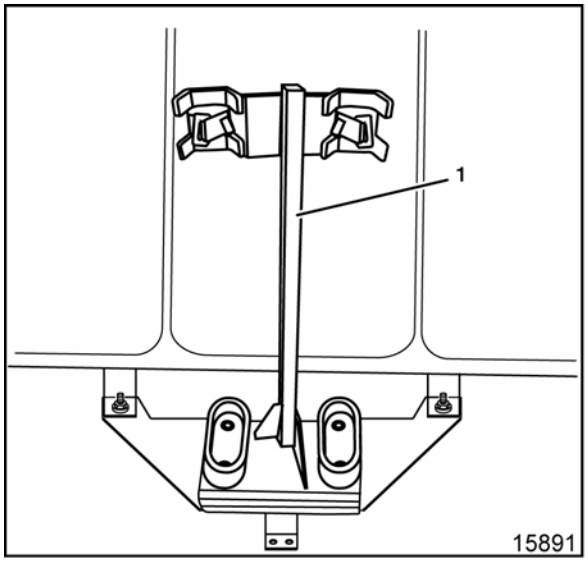


Installation Procedure

1. Using the old floor mat as a template cut gun rack holes in the new floor mat.
2. Install the floor mat. Refer to Carpet Replacement – Front W/O HP2 in Interior Trim in the 2004 C/K Truck Service Manual.



3. Install gun rack (1) and install bolts. Refer to Gun Rack Replacement – Lower or Gun Rack Replacement – Floor Mount (Crew Cab) or Gun Rack Replacement – Floor Mount (Utility).



Gun Rack Replacement – Floor Mount (Crew Cab)

Removal Procedure

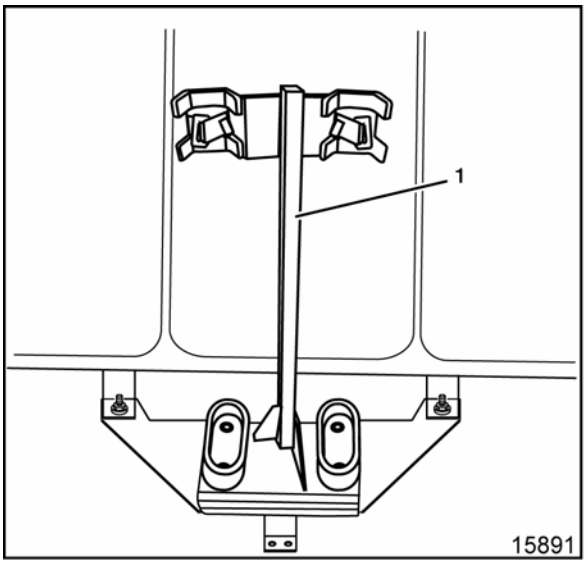
1. Remove the rear bolts securing gun rack to the floor.
2. Loosen the inner rear front seat bolts enough to slide back.
3. Remove the gun rack (1) from vehicle.

Installation Procedure

1. Install the gun rack (1) and slide under the front seat bolts.
2. Align the rear transfer holes with holes in the floor.

Notice: Refer to Fastener Notice in Cautions and Notices.

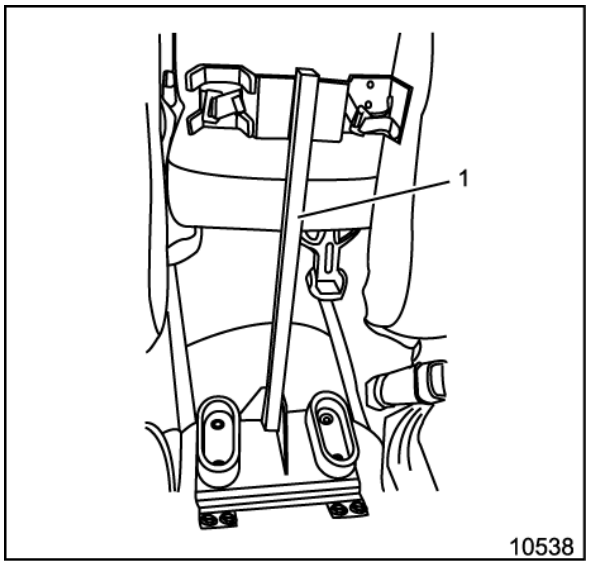
3. Install the bolts in the mount and tighten.
   Tighten
   - Tighten the rear bolts to 8 N•m (70 lb in).
   - Tighten the front bolts to 55 N•m (41 lb ft).



Gun Rack Replacement – Floor Mount (Utility)

Removal Procedure

1. Remove bolts securing gun rack to the floor.
2. Remove the gun rack (1) from vehicle.

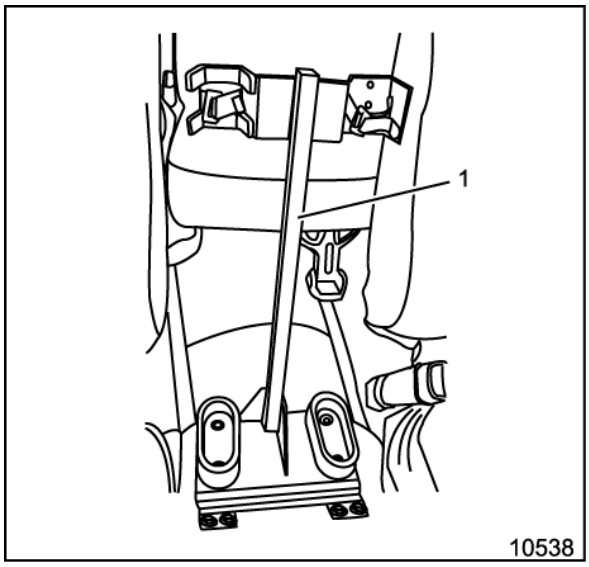


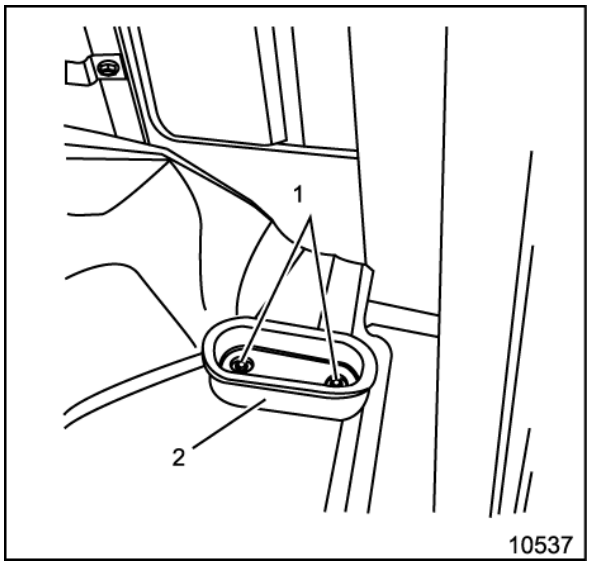
Installation Procedure

1. Install the gun rack (1) and slide under the front seat bolts.

Notice: Refer to Fastener Notice in Cautions and Notices.

2. Install the bolts in the mount and tighten.
   Tighten
   Tighten the rear bolts to 8 N•m (70 lb in).

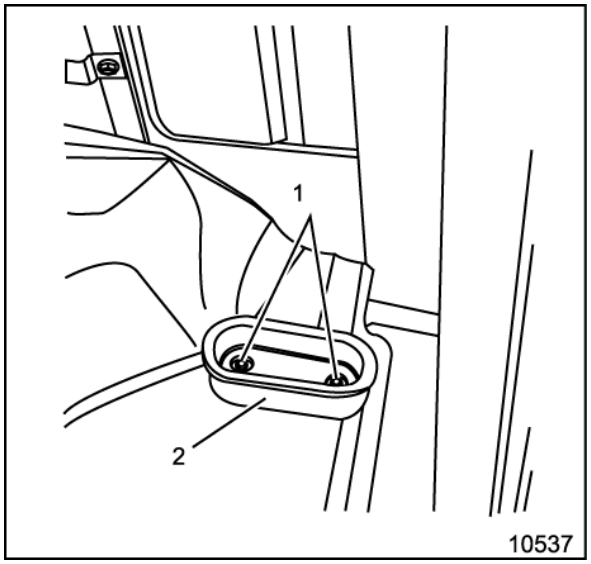




Gun Rack Support Replacement – Lower

Removal Procedure

1. Remove the 2 bolts (1) holding the support to the floor.
2. Remove the support (2).

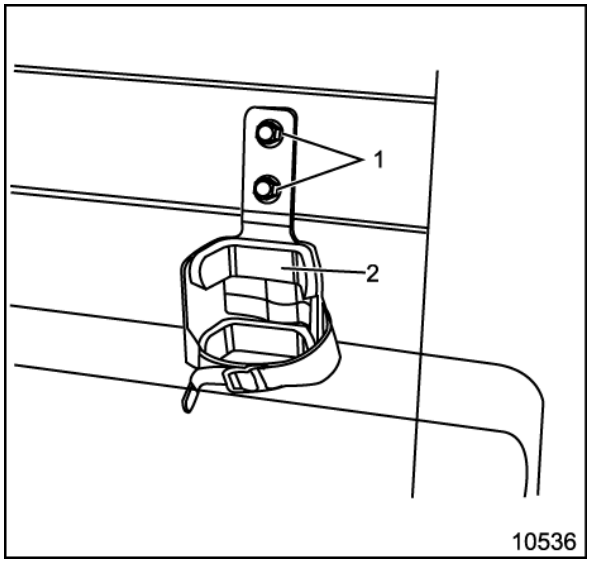


Installation Procedure

1. Install the support (2) by aligning the bolts holes.

Notice: Refer to Fastener Notice in Cautions and Notices.

2. Install the 2 bolts (1) holding the support to the floor, and tighten.
   Tighten
   Tighten the 2 bolts to 8 N•m (70 lb in).

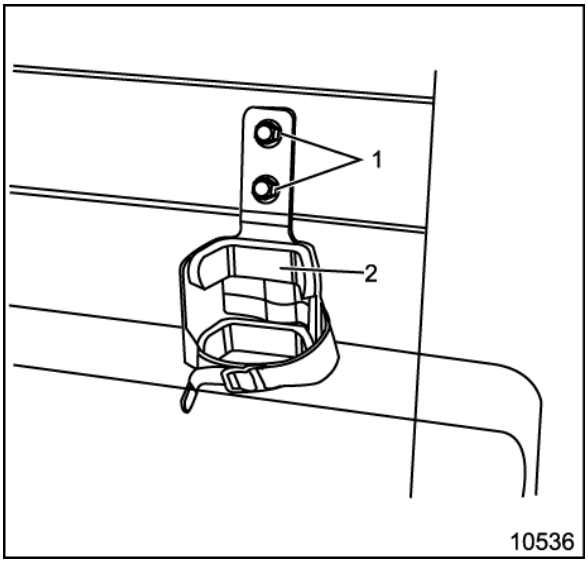


Gun Rack Replacement – Upper

Removal Procedure

1. Remove the lower rear window molding. Refer to Molding Replacement – Rear Window Lower in Interior Trim in the 2004 C/K Truck Service Manual.
2. Remove the bolts (1) holding the upper mount to the inner body.
3. Remove the upper gun rack (2).

Installation Procedure



1. Install the upper gun rack assembly (2) by aligning to the body side inner upper panel.

Notice: Refer to Fastener Notice in Cautions and Notices.

2. Install the bolts (1) to the assembly.
   Tighten
   Tighten the bolts to 8 N•m (70 lb in).
3. Install the lower rear window molding. Refer to Molding Replacement – Rear Window Lower in Interior Trim in the 2004 C/K Truck Service Manual.

Description and Operation

Interior Description

The interior trim options for these military vehicles include special gun racks for the M14 and M16 firearms.

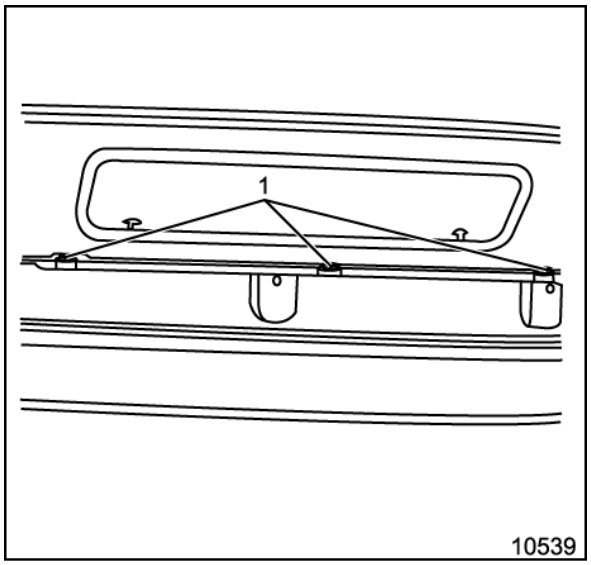
Refer to the 2004 LSSV Owner’s Manual Supplement for gun rack operation and use.

Body Rear End

Specifications

Fastener Tightening Specifications

Application	Specification	
	Metric	English
Cargo Cover Bow Strap Retaining Nuts	5 N•m	44 lb in
Cargo Cover Front End Rail Bolts	8 N•m	70 lb in
Cargo Cover Rail and Hinge/Upward Bolts	8 N•m	70 lb in
Cargo Cover Rail Outside Bolts	26 N•m	19 lb ft
Cargo Cover Strut Bolts	5 N•m	44 lb in
Fiberglass Top Bolts	68 N•m	50 lb ft
Maintenance Body Bolts	85 N•m	63 lb ft

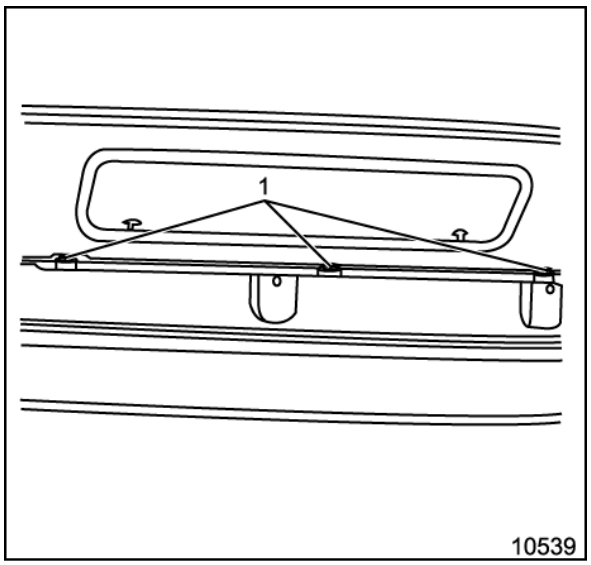


Repair Instructions

Fiberglass Top Replacement

Removal Procedure

1. Remove the electrical connection for the light.
2. Remove the bolts (1) securing the cap to the bed rails.
3. With the aid of an assistant, remove the top from the vehicle.
4. Remove the old sealer tape from the bed rails.

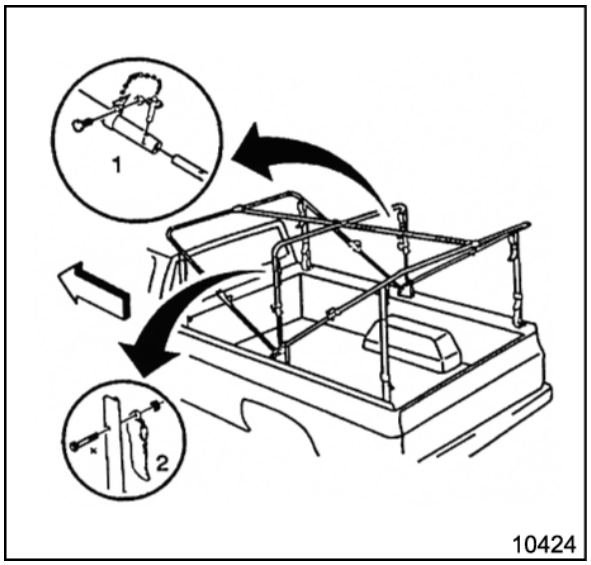


Installation Procedure

1. Install the new sealer tape to the bed rails.
2. With the aid of an assistant, place the top on the bed rails.

Notice: Refer to Fastener Notice in Cautions and Notices.

3. Install the bolts (1) and tighten.
   Tighten
   Tighten bolts to 68 N•m (50 lb ft).
4. Connect the electrical connection for light.

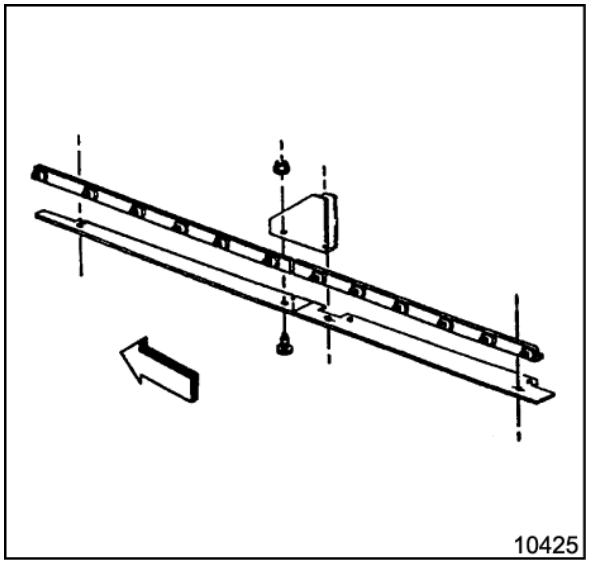


Cargo Cover Side Rail and Hinge Replacement

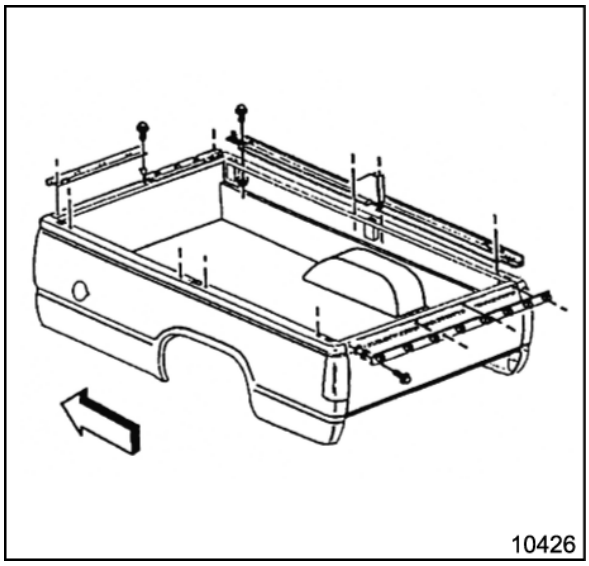
Removal Procedure

1. Remove the cargo cover, the top bows and side struts. Refer to Cargo Cover Top Bows Replacement and Cargo Cover Strut Replacement.
2. Remove the troop seats. Refer to Seat Replacement – Troop in Seats.

3. Remove the 4 bolts and nuts holding the 2 rail adapter plates to the side rail.
4. Remove the 2 bolts and nuts holding the bow hinge bracket.
5. Remove the side rail and adapter rail.
6. Remove the bow hinge bracket.

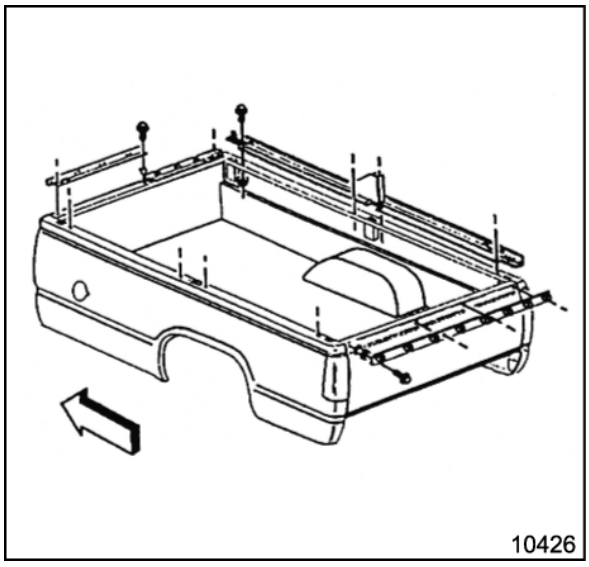


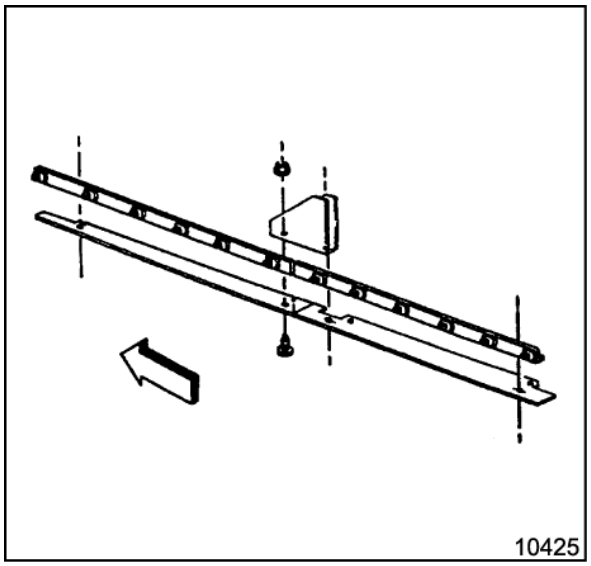
7. Remove the side rail.
8. Remove the side rail adapter.
9. Drill out the 4 existing rivnuts (if damaged) from the box rail.



Installation Procedure

1. Apply 2 sided foam tape to the underside of the rails and to the edges of the mounting holes.
2. Install rivnuts to the existing holes (if damaged) using a rivnut installer.

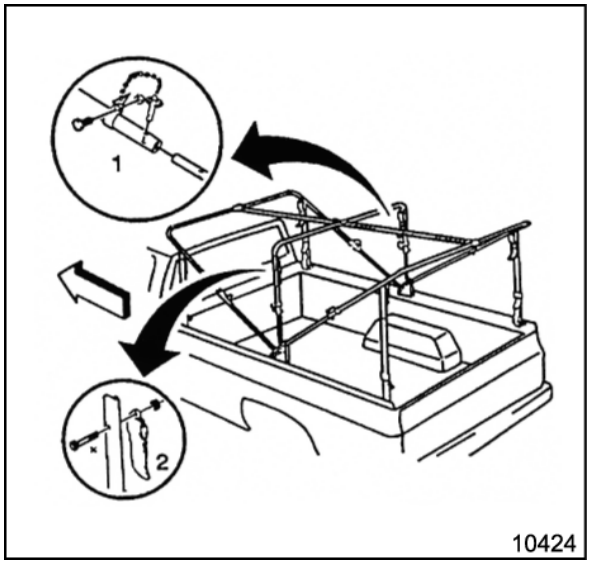




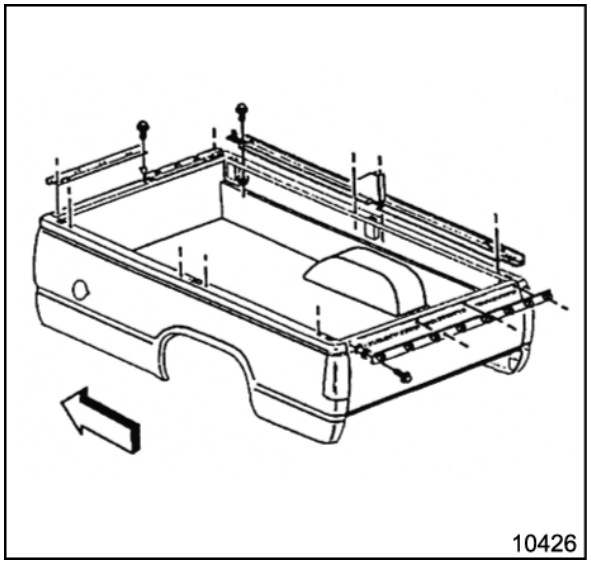
Notice: Do not use the jacknuts supplied in the kit. Use rivnuts (TX016183) instead.

Notice: Refer to Fastener Notice in Cautions and Notices.

3. Install the side rail over the adapter plates, with the 2 outside bolts and the 2 upward facing bracket bolts and nuts.
   Tighten
   - Tighten the 2 outside bolts to 26 N•m (19 lb ft).
   - Tighten the 2 upward facing bolts to 8 N•m (70 lb in).



4. Install side rail adapter plates, front and rear, by aligning the bolt holes to the holes in the box.
5. Install the troop seats. Refer to Seat Replacement – Troop in Seats.
6. Install the side struts, top bows and cargo cover. Refer to Cargo Cover Strut Replacement and Cargo Cover Top Bows Replacement.



Cargo Cover Front End Rail Replacement

Removal Procedure

1. Remove the cargo cover from the front of the cargo cover assembly. Refer to Cargo Cover Replacement.
2. Remove the 4 bolts from the front end rails as needed.
3. Remove the 4 rivnuts by drilling out (if damaged).

Installation Procedure

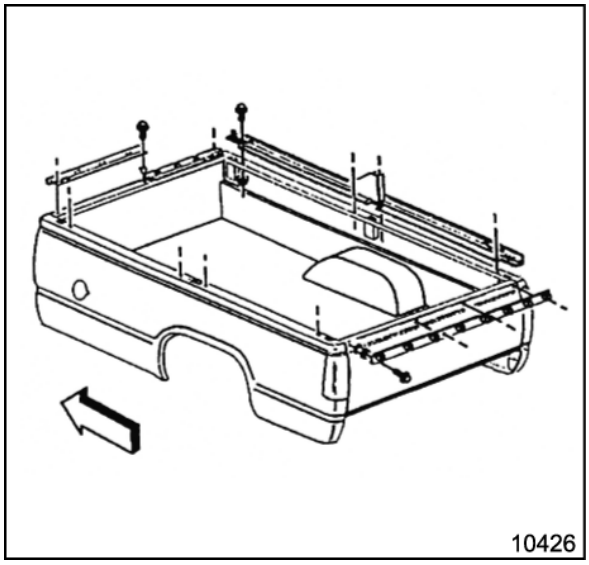
1. Apply 2 sided foam tape to the underside of the rails and to the edges of the mounting holes.

Notice: Do not use the jacknuts supplied in the kit. Use rivnuts (TX016183) instead.

2. Install the 4 rivnuts (if damaged) to the mounting holes using a rivnut installer.

Notice: Refer to Fastener Notice in Cautions and Notices.

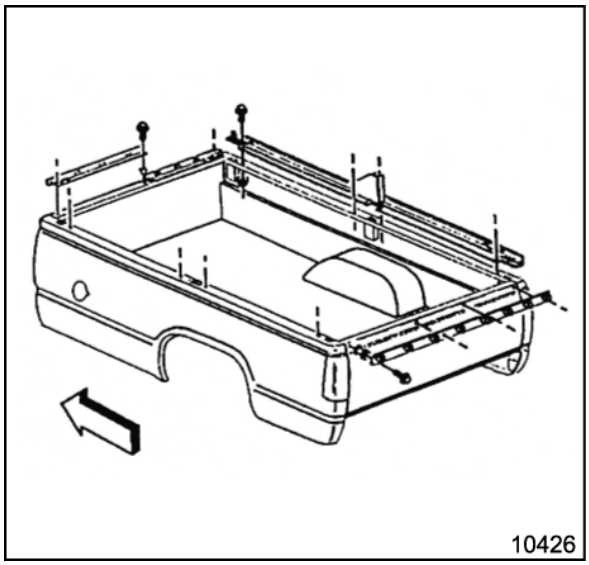
3. Install the 2 front end rails to the front end of the box with 4 bolts over the 4 rivnuts.
   Tighten
   Tighten the 4 bolts to 8 N•m (70 lb in).
4. Install the front of the cargo cover to the front end rail as needed. Refer to Cargo Cover Replacement.



Cargo Cover Rear End Rail Replacement

Removal Procedure

1. Remove the cargo cover from the end gate side of the cargo cover assembly. Refer to Cargo Cover Replacement.
2. Remove the 4 bolts from the end gate rail as needed.
3. Remove the 4 rivnuts by drilling out (if damaged).



Installation Procedure

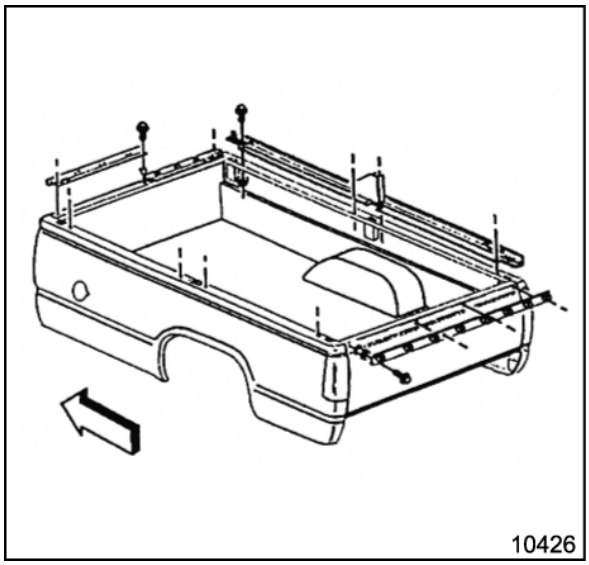
1. Apply 2 sided foam tape to the underside of the rail and to the edges of the mounting holes.

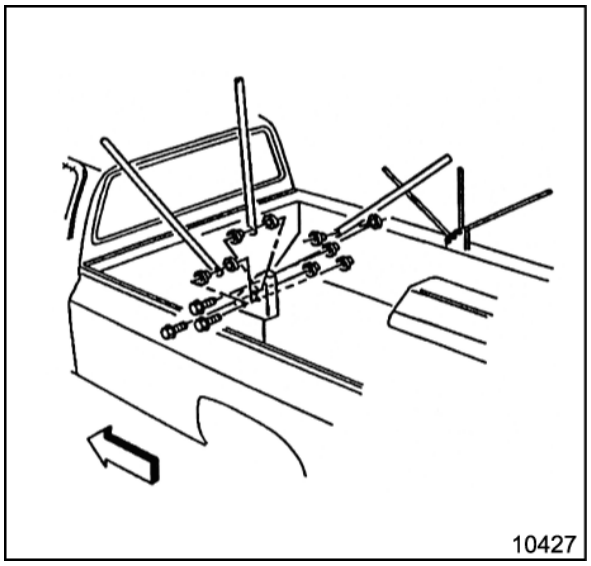
Notice: Do not use the jacknuts supplied in the kit. Use rivnuts (TX016183) instead.

2. Install the 4 rivnuts (if damaged) to the mounting holes using a rivnut installer.

Notice: Refer to Fastener Notice in Cautions and Notices.

3. Install the end gate rail over the 4 rivnuts with 4 bolts.
   Tighten
   Tighten the 4 bolts to 8 N•m (70 lb in).
4. Install the cargo cover to the rear end as needed. Refer to Cargo Cover Replacement.

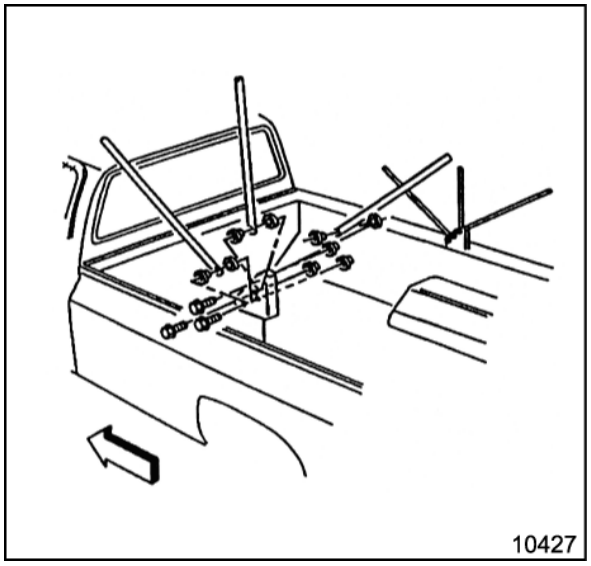




Cargo Cover Strut Replacement

Removal Procedure

1. Remove the cargo cover and top bows. Refer to Cargo Cover Replacement and Cargo Cover Top Bows Replacement.
2. Remove the 3 front strut bolts holding the 3 side struts to the hinge bracket.
3. Remove the 6 nylock nuts.
4. Remove the 3 side struts with the 6 plastic bushings. (Replace if damaged.)

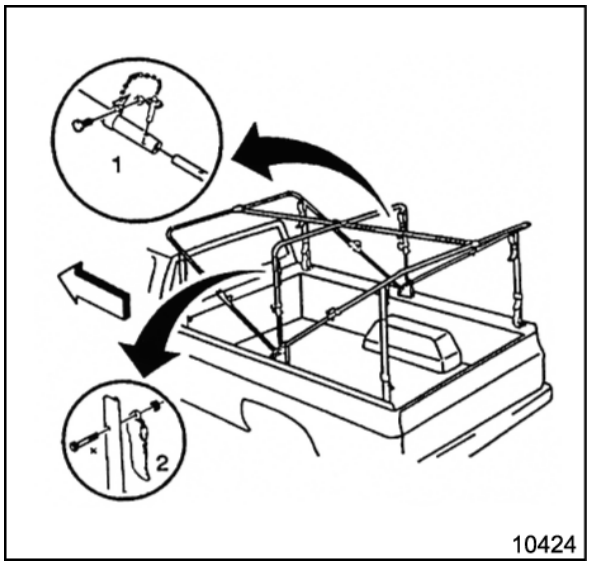


Installation Procedure

1. Install the 2 plastic bushings, 1 to the inside and 1 to the outside of the base hole of each side strut.
2. Install the front strut 857.25 mm (33.75 in) inside the base of the hinge bracket at the first hole. Use a nylock nut on the inboard side and a bolt on the outboard side of the bracket.
3. Install the center strut 571.50 mm (22.5 in) inside the bracket at the mid-level hole with a nylock and bolt in similar fashion.

Notice: Refer to Fastener Notice in Cautions and Notices.

4. Install the rear strut 821.43 mm (32.34 in) at the top hole with the nylock and bolt in similar fashion.
   Tighten
   Tighten the strut bolt to 5 N•m (44 lb in).
5. Install the cargo cover and top bows. Refer to Cargo Cover Replacement and Cargo Cover Top Bows Replacement.

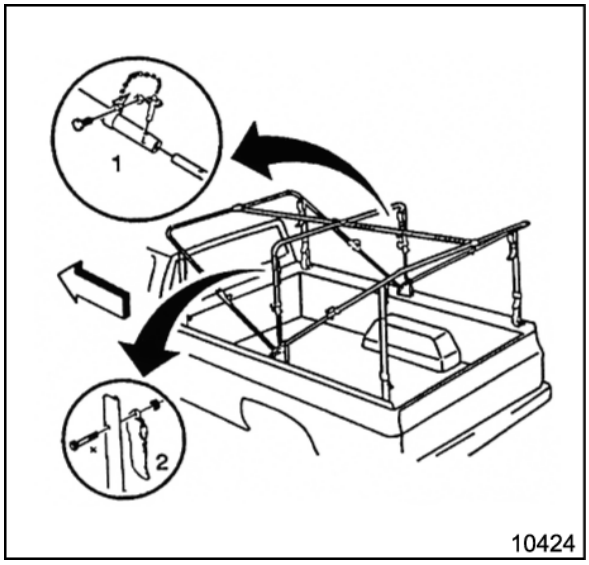


Cargo Cover Top Bows Replacement

Removal Procedure

1. Remove the cargo cover. Refer to Cargo Cover Replacement.
2. Remove the strap tensioners from the front and rear top bows by withdrawing from the side rail loop.
3. Remove the 6 pins (1) holding the 3 top bows to the 6 side struts.
4. Remove the 3 top bows from the struts.
5. Slide the strap off each top bow. Remove the bows from the vehicle.

Installation Procedure



1. Slide the strap onto the top bows at the center.
2. Attach the retainer pin (1) assembly as shown at the base of each bow end.

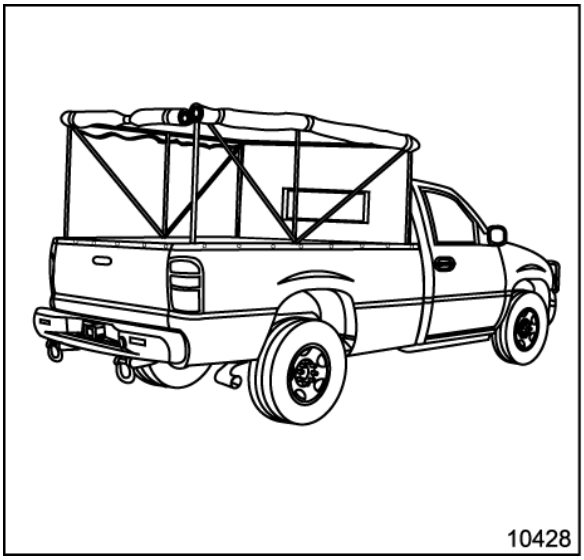
Notice: Refer to Fastener Notice in Cautions and Notices.

3. Attach the retainer cover strap assembly (2) to the holes on both the left and right sides of the center top bow as shown. Attach the straps to the inboard sides of each with a nut.
   Tighten
   Tighten the 2 cover strap retaining nuts to 5 N•m (44 lb in).
4. Slide the front roof bow onto the front struts and install the pins into the bow/strut holes.
5. Slide the center roof bow on the center struts and install the pins into the bow/strut holes.
6. Slide the rear roof bow onto the rear struts and install the pins into the bow/strut holes.
7. Install the strap tensioners to the front and rear top bows by threading them through the retainer loop of the side rail.

Note: The buckle should face inboard.

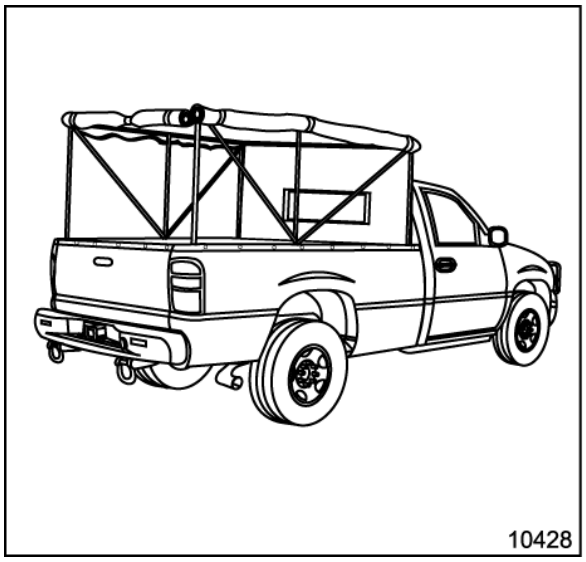
8. Install the cargo cover. Refer to Cargo Cover Replacement.

Cargo Cover Replacement



Removal Procedure

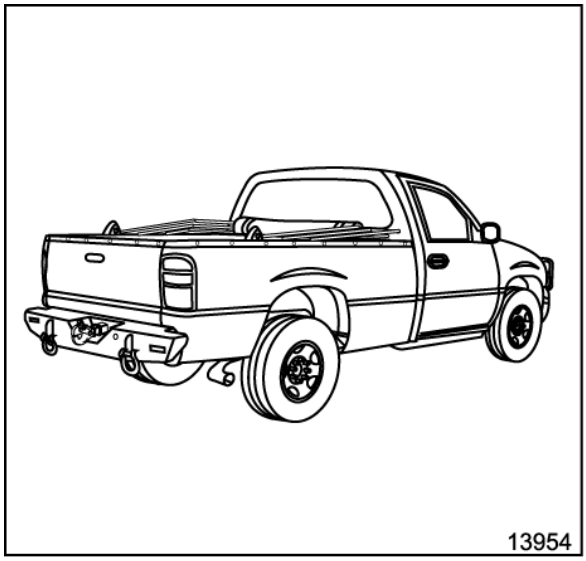
1. Pull apart the velcro corners of the front and rear flaps and roll the cargo cover up over the top.
2. Remove the cargo cover from the side rail and end gate retainers by releasing tension and removing hook. Pull cover free.
3. Untie, release or unbuckle all cover retainers.
4. Remove the cargo cover.



Installation Procedure

Important: All trailing edges must fall to the proper length at each side of the box rail. All tether ties must appear on the interior. Provide adequate slack between the bow straps and the cover. The new cover will be a tighter fit.

1. Install the cargo cover to the top bows and align so that the velcro strips are at the corners.
2. Install or attach all interior retainers to the bows, struts and loops.
3. Press the velcro flaps down.
4. Install the cover to the front, end and side in hooks and pull strap at the base of the cover as needed.

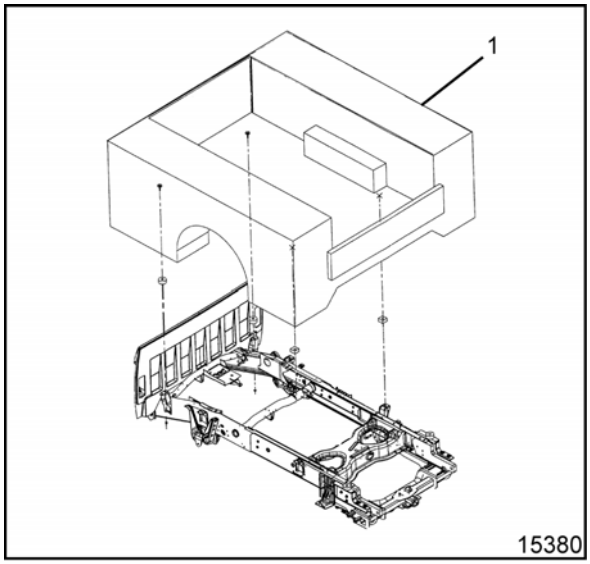


Cargo Cover Stowage Replacement

1. Release the front and rear support straps.
2. From the rear of the vehicle, push the bows and canvas forward, folding the canvas around the bows.

Note: The cover may also be folded neatly and stored behind the seat in the cab.

3. Completely fold the bows down against the front of the cargo box and secure them with the front straps.



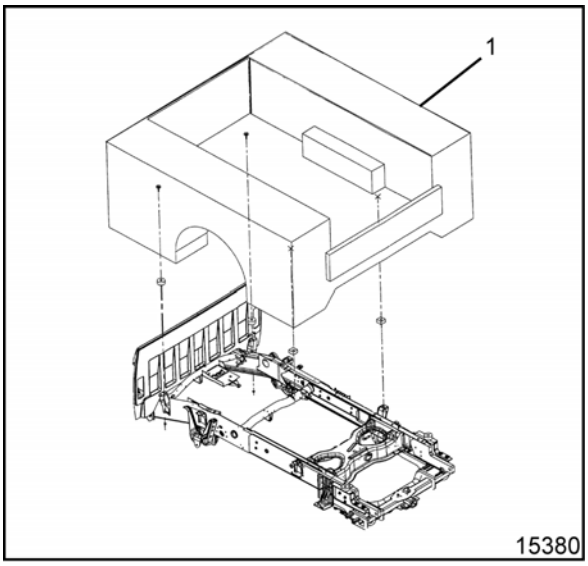
Maintenance Body Replacement

Removal Procedure

Caution: Refer to Battery Disconnect Caution in Caution and Notices.

1. Disconnect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure in Engine Electrical.
2. Disconnect the wiring harness for the maintenance body.
3. Remove the rear bumper assembly. Refer to Bumper Replacement – Rear (Maintenance Body) in Bumpers.
4. Disconnect fuel fill and vent hoses from fuel fill bucket.
5. Remove the maintenance body fasteners from the frame rails.
6. Lift and remove the maintenance body (1) from the chassis.

Installation Procedure



1. Align the maintenance body (1) on the frame rails.

Notice: Refer to Fastener Notice in Caution and Notices.

2. Loosely install the maintenance body fasteners to the frame rails.
   Tighten
   Tighten the retaining bolts to the frame rail to 85 N•m (63 lb ft).
3. Connect the fuel fill and vent hoses to the fuel fill bucket.
4. Install the rear bumper assembly. Refer to Bumper Replacement – Rear (Maintenance Body) in Bumpers.
5. Connect the wiring harness for the maintenance body.
6. Connect the battery cables. Refer to Battery Cable Disconnect/Connect Procedure in Engine Electrical.

Description and Operation

Body Rear End

The pickup vehicle is equipped with several military options including a cargo cover, troop seats (left and right), fiberglass top and maintenance body.

Cargo Cover

The cargo cover is a rain resistant canvas top cover supported by bows and struts and attached by rails to the cargo box. It can be held down with hooks and buckles or velcroed closed. It may also be rolled up and secured with straps or folded and stowed while not in use.

Cargo Cover Cleaning

If the cargo cover has deteriorated, replace it.

The cargo cover is a waterproof, welded, plastic coated polyester. Wash the cover using only mild soap and water. Do not use cleaning agents that are petroleum based, or that contain acid or abrasives. All cleaning agents should be flushed promptly and not allowed to dry on the surface. Do not towel dry or wax the surface. The windows should be washed with a water soaked cloth. Do not rub dry.

Fiberglass Top

The fiberglass top is a hard top cover supported by the bed rails and has side and back windows that are able to open and lock. Refer to the 2004 Owner's Manual Military Supplement for further details.

Maintenance Body

The maintenance body is mounted to the pickup chassis using the same attachment locations as a pickup bed. The maintenance body has multiple lighted locking doors and an open cargo space.

Paint/Coatings

Paint Codes

Exterior and Interior Colors

Location/Color	Fed.-std.-595 B	PPG No.
Forest Green	34094	CA 8211/I5086
Desert Tan	-	8211/I07036MPY228

For specific paint/coating details, contact PPG Automotive Coatings at 1-818-549-7979.

Repair Instructions

Exterior Painting

Metal Refinishing

1. Remove all exterior ornaments and emblems from the panel to be painted.
2. Prepare all metal surfaces to be painted.

Note: Cut paint at door seals, remove or mask over door seals.

3. Repaint all exterior metal with lustreless paint. Refer to Exterior and Interior Colors Chart for current paint part number.

Important: This is not CARC (Chemical Agent Resistant Coating) paint. The recommended supplier is PPG.

4. Remove masking tape.

Notice: Exercise care when removing masking and handling vehicle after repainting, to avoid marks and dirt on the new paint. It is very difficult to clean up without leaving noticeable damage.

Grille Refinishing

Procedure

Note: Ensure that all chrome areas have 100% coverage.

1. Using a coarse refinishing material, scuff the surface of the grille.
2. Using etching primer, prepare the surface of the grille for the finish coat.
3. Repaint all exterior metal with lustreless paint. Refer to Exterior and Interior Colors Chart for current paint part number.

Important: This is not CARC paint. The recommended suppler is PPG.

Frame and Underbody

Specifications

Fastener Tightening Specifications

Application	Specification	
	Metric	English
Receiver Hitch Bolts – Military Hitch (Utility)	125 N•m	92 lb ft
Trailer Hitch Mounting Bolts (Maintenance Body)	117 N•m	87 lb ft

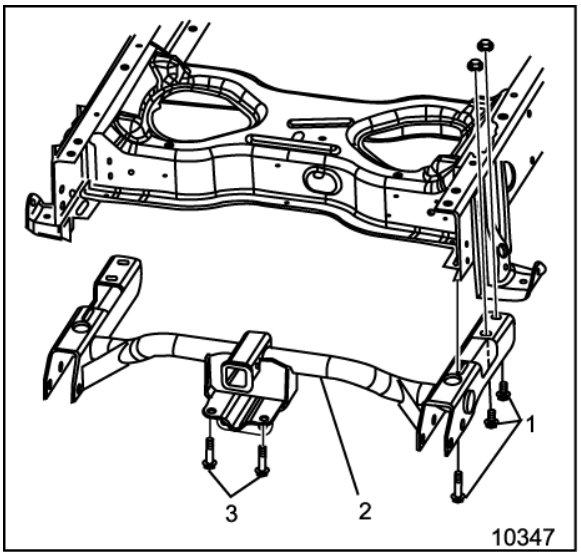
BLANK

Repair Instructions

Military Rear Receiver Hitch Replacement (Utility)

Removal Procedure

1. Remove the pintle hitch from the receiver.
2. Remove the clevis mounts. Refer to Clevis/Tie Down Bracket Replacement – Rear (Utility) in Bumpers.
3. Remove the bolts (3) from the bumper.
4. Remove the bolts (1) from the frame.
5. Remove the receiver (2) from the vehicle.

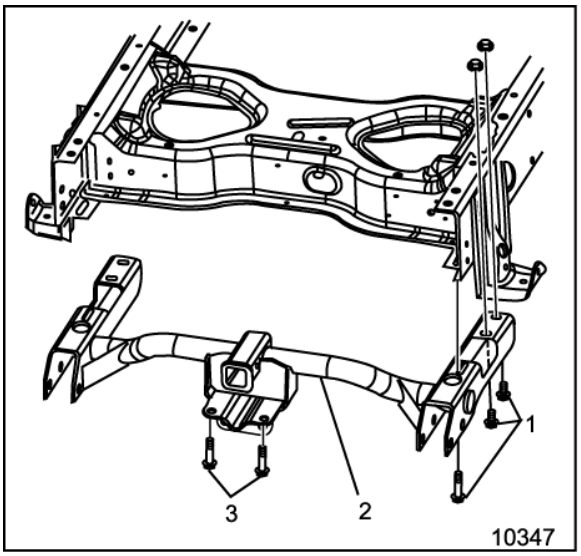


Installation Procedure

1. Install the receiver (2) on the vehicle and loosely install the bolts (1) in the frame.
2. Loosely install the bolts (3) in the bumper.

Notice: Refer to Fastener Notice in Cautions and Notices.

3. Tighten the receiver bolts (1) and (3).
   Tighten
   Tighten the bolts to 125 N•m (92 lb ft).
4. Install the clevis mounts. Refer to Clevis/Tie Down Bracket Replacement – Rear (Utility) in Bumpers.
5. Install the hitch in the receiver.



Trailer Hitch/Reinforcement Plate Replacement (Maintenance Body)

Removal Procedure

1. Remove the pintle hook from the trailer hitch.
2. Remove the bolts from the tie down plate.
3. Remove the trailer hitch and reinforcement plate from the vehicle.

Installation Procedure

1. Position trailer hitch and reinforcement plate to the vehicle.

Notice: Refer to Fastener Notice in Cautions and Notices.

2. Install the bolts to the tie down plates.
   Tighten
   Tighten the hitch mounting bolts to 117 N•m (87 lb ft).
3. Install the pintle hook.

Description and Operation

Frame and Underbody Description

Hitch Receiver (Utility)

Hitch receiver is frame mounted. The receiver will allow use of different components such as a pintle hook or a multi-mount winch.

The military hitch receiver is accessible through the rear bumper to accommodate a higher trailer torque height.

Hitch Receiver (Pickup)

The hitch receiver for the pickups is integral to the front and rear bumper assemblies.

The receiver will allow use of different components such as a pintle hook or a multi-mount winch.

Hitch Receiver (Maintenance Body)

The rear hitch receiver on the maintenance body is mounted below the rear bumper to the clevis tie down plates.

The receiver will allow use of different components such as a pintle hook or a multi-mount winch.

BLANK

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SERVICE MANUAL

2004

Light Service Support Vehicle
LSSV

GM Defense